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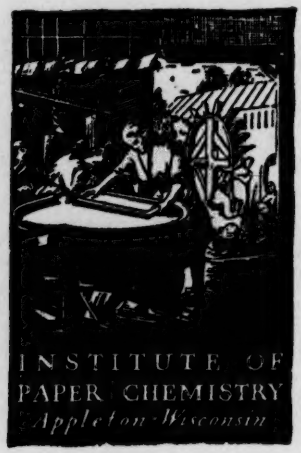
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

JANUARY • 1954

Volume 24 Number 5

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The Bulletin of The Institute of Paper Chemistry is published monthly at Appleton, Wisconsin, by the Board of Trustees of The Institute of Paper Chemistry. Entered as Second Class matter November 13, 1930, at the postoffice at Appleton, Wis., under the act of August 24, 1912. Printed in U.S.A.

THE INSTITUTE OF PAPER CHEMISTRY

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Books and Pamphlets Added to the Library During December

ASBESTOS

ASBESTOS TEXTILE INSTITUTE. Handbook of asbestos textiles. [New Brunswick] The Institute [c1953] 78 p.

ATLASES

CONTAINER CORPORATION OF AMERICA. World geo-graphic atlas, a composite of man's environment. Ed. and designed by Herbert Bayer. [Chicago] The Corporation, 1953. 368 p.

ATOMIC ENERGY

ANNUAL REVIEW of nuclear science. Published by Annual Reviews, Inc., in co-operation with the National Research Council of the National Academy of Sciences. James G. Beckerley, editor; Martin D. Kamen, Donald F. Mastick, and Leonard I. Schiff, associate editors. Stanford, Calif., Annual Reviews, 1953. v. 3. 412 p.

BIOGRAPHY

WHO'S WHO in British science 1953. London, Leonard Hill [1953] 292 p.

CARBOHYDRATES

WILLIAMS, R. T., ed. Biological transformations of starch and cellulose; a symposium held at The London School of Hygiene and Tropical Medicine on 21 February 1953. Biochemical Society symposia no. 11. Cambridge, University Press, 1953. 84 p.

CHEMISTRY, INORGANIC—SYNTHESIS

INORGANIC SYNTHESES. Editor-in-chief, John C. Bailar, Jr. New York, McGraw-Hill Book Co., 1953. v. 4. 218 p.

DISSERTATIONS, ACADEMIC

INDEX to theses accepted for higher degrees in the universities of Great Britain and Ireland. Ed. by P. D. Record. London, Aslib [1953] v. 1, 1950-51. 157 p.

ECONOMIC CONDITIONS—YEARBOOKS

The ECONOMIC ALMANAC 1953-1954; a handbook of useful facts about business, labor and government in the United States and other areas. Frederick W. Jones, editor; Anita R. Beckerman, assistant editor. New York, publ. for The [National Industrial] Conference Board by Crowell [c1953] 740 p.

ELECTRONICS

MILLMAN, JACOB, and SEELY, SAMUEL. Electronics. New York, McGraw-Hill Book Co., 1951. 598 p.

FORESTS AND FORESTRY

AMERICAN FOREST CONGRESS. *4th, Washington, D.C.*, Oct., 1953. Proceedings of the fourth American Forest Congress, October 29, 30 and 31, Washington, D.C. Washington, The American Forestry Association, 1953. 372 p.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Research in forestry and forest products. A world directory of research institutions with the objectives and summary of their activities. Prepared in co-operation with the International Union of Forest Research Organizations. FAO forestry and forest products study no. 9. Rome, Italy, The Organization, 1953. 323 p.

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Forestry abstracts coverage list, periodicals and series. FAO forestry and forest products studies no. 7. Rome, Italy, The Organization, 1953. 180 p.

FRESH-WATER BIOLOGY

PENNAK, ROBERT W. Fresh-water invertebrates of the United States. New York, Ronald Press [c1953] 769 p.

INDEXING

TAUBE, MORTIMER, and ASSOCIATES. Studies in coordinate indexing. [Washington] Documentation Incorporated, 1953. 110 p.

INDUSTRIAL RESEARCH

[WOOD, HELEN, CAIN, ROBERT W., and SCHUSTER, JOSEPH H.] Scientific research and development in American industry, a study of manpower and costs. U. S. Bureau of Labor Statistics. Bulletin no. 1148. Washington, U. S. Govt. Print. Off. [1953] 106 p.

INK

WOLFE, HERBERT J. Pressmen's ink handbook. New York, Dorland Books, 1952. 267 p.

MICROSCOPE AND MICROSCOPY

AMERICAN SOCIETY FOR TESTING MATERIALS. Symposium on light microscopy. Presented at the 55th annual meeting (50th anniversary meeting) American Society for Testing Materials,

New York, N.Y., June 25, 1952. ASTM special technical publication no. 143. Philadelphia, The Society [c1953] 126 p.

HEYN, A. N. J. Fiber microscopy, a textbook and laboratory manual. New York, Interscience Publishers, 1954. 410 p. + 12 plates.

PACKAGING

AMERICAN MANAGEMENT ASSOCIATION. Advances in packaging material and design. Packaging series number 42. New York, The Association [c1953] 56 p.

AMERICAN MANAGEMENT ASSOCIATION. Aids to efficient packaging operations. Packaging series number 41. New York, The Association [c1953] 56 p.

AMERICAN MANAGEMENT ASSOCIATION. Practical problems of packing and handling. Packaging series number 43. New York, The Association [c1953] 27 p.

MODERN PACKAGING encyclopedia, 1954. New York, Packaging Catalog Corporation, c1953. 758 p.

PAPER—TESTING

AMERICAN SOCIETY FOR TESTING MATERIALS. *Committee D-6 on Paper and Paper Products* and *Committee D-10 on Shipping Containers.* ASTM standards on paper and paper products and shipping containers (with related information). Methods of testing, specifications, definitions. Philadelphia, The Society, 1953. 382 p.

PAPER MAKING AND TRADE

RENKER, ARMIN. Die Geburt des Papiers, eine Betrachtung über formschaffende Arbeit. Zerkall, 1952. 63 p.

PAPER MAKING AND TRADE—ASSOCIATIONS

FINSKA PAPPERSINGENIÖRSFÖRENINGEN. Föredrag. Helsingfors, The Association, 1953. v. 11. 428 p.

PAPER SPECIALTIES

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION. Paper for printing today and tomorrow. By the Intelligence Unit of *The Economist,* London; presented jointly by Unesco and FAO. Paris, Unesco, 1952. 139 p.

SAFETY

[MCCORMACK, GEORGE R., and HOMAN, SHELDON W.] Injuries and accident causes in the manufacture of paperboard containers;

a detailed analysis of hazards and of injury rates for 1950 by region, plant size, and operating departments. U. S. Bureau of Labor Statistics. Bulletin no. 1139. Washington, U. S. Govt. Print. Off. [1953] 59 p.

SILK SCREEN PRINTING

EISENBERG, JAMES. Silk screen printing. Bloomington, McKnight & McKnight [c1952] 55 p.

STARCH

RADLEY, J. E. Starch and its derivatives. 3d ed. rev. London, Chapman & Hall, 1953. v. 2. 465 p.

STOCK PREPARATION

WULTSCH, FERDINAND, and AFLENZER, FRIEDRICH. Vergleichende Untersuchungen an kontinuierlich und diskontinuierlich arbeitenden Stoffaufbereitungs- und Stoffmahlungssystemen. Schriften des Vereins der Zellstoff- und Papier-Chemiker und -Ingenieure, Band 25. Darmstadt, Der Verein, 1953. 32 p.

STRAINS AND STRESSES

KOLSKY, H. Stress waves in solids. Oxford, Clarenden Press, 1953. 211 p.

LEE, GEORGE HAMOR. An introduction to experimental stress analysis. New York, Wiley [c1950] 319 p.

TREES

LITTLE, ELBERT L., JR. Check list of native and naturalized trees of the United States (including Alaska), prepared under the direction of the Forest Service Tree and Range Plant Name Committee. Agriculture handbook no. 41. Washington, U. S. Govt. Print. Off., 1953. 472 p.

VACUUM-TUBE CIRCUITS

SEELY, SAMUEL. Electron-tube circuits. New York, McGraw-Hill Book Co., 1950. 529 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ABSORPTION SPECTRA

FRIEDEL, R. A., and PELIPETZ, M. G. Infrared spectra of coal and carbohydrate chars. J. Opt. Soc. Amer. 43, no. 11: 1051-2 (November, 1953).

Infrared spectra of the anthraxylon constituent of bituminous coal are compared with the spectra of cellulose char and sugar char. The similarity of the spectra indicates the presence of definite molecular configurations in the chars and lends valuable support to the theory that cellulose is an important precursor of coal. 2 figures and 12 footnotes. E.S.

ADHESIVES

HELMIN, KURT. Adhesives for packaging purposes. Verpackungs Rundschau no. 9: 386-8 (September, 1953). [In German]

Adhesives prepared from plant and animal raw materials, natural resins, minerals, and synthetic resins are listed in tabular form, giving composition, properties, and suitable packaging applications. 5 tables. E.S.

MODERN PACKAGING ENCYCLOPEDIA. Adhesives, coatings and tapes. Modern Packaging Encyclopedia, 1954: 141-4, 147-8, 150, 155-6, 159-60, 164, 167-8, 172 (1953).

Types and uses of adhesives, surface treatments, and tapes used in packaging are discussed in the following articles, listed by authors and titles: Anon. Adhesives—types and uses, p. 142; Eldridge, Harry S. Liquid vegetable adhesives, p. 142; Adams, J. R. Dry vegetable adhesives, p. 142-3; Crowell, A. B. Resin emulsions, p. 143; Bartlett, F. Parker, Jr. Lacquer adhesives, p. 143-4; Lenz, Earl C. Nonwarp and flexible animal glues, p. 144, 147; McGaffin, R. C. Hot melts, p. 147-8; Carter, James R. Thermoplastic adhesives, p. 148; Lodge, R. J. Casein adhesives, p. 148, 150; Williamson, D. G. What to tell your adhesives supplier, p. 150; Fawkes, C. E. A review of surface treatments—1 table and 3 figures, p. 155-6, 159-60; Danielson, Irvin. Tapes used in packaging—5 illustrations, p. 164, 167; Balkema, E. H. Economy in packaging, p. 168; and Sederlund, W. Efficient handling of adhesives, p. 172. R.A.S.

ALKALINE PROCESSES

FELTON, E. W. A study of the boiling process and a mill application. World's Paper Trade Rev. 140, no. 15: 1095-6 (Oct. 8, 1953); Tech. Bull. Tech. Sect., Brit. Paper and Board Makers' Assoc. 30, no. 4: 97-101 (August, 1953).

The author shows that pulp-digestion (boiling) variables of temperature and pressure may be expressed as a single unit, a "boiling unit." The mathematics and some experimental data of laboratory alkaline cooks are presented on the reaction kinetics involved. The use of the concept is claimed to allow

easy and more efficient control of any cooking process in practice. 1 table and 2 references. D.H.

SCHNYDER, A. P. What's new in the kraft mills? Paper Trade J. 137, no. 22: 14-15 (Nov. 27, 1953).

Following a brief enumeration of the factors which account for the trend away from the sulfite and toward the kraft process, the outstanding improvements in the kraft industry are reviewed under the headings: raw materials; wood and chip preparation; digesters; brown stock washing, screening, and stock storage; bleach plant; chemical departments; pulp drying and finishing; and utilities. E.S.

ALKALINE PROCESSES—ODOR TROUBLE

BERGSTRÖM, HILDING. Pollution of water and air by sulphate mills. Pulp Paper Mag. Can. 54, no. 12: 135-40 (November, 1953); *cf.* B.I.P.C. 23: 537.

This is a complete translation of the Swedish article. 2 tables, 6 figures, and 3 references. E.S.

ALUMINUM

MODERN PACKAGING ENCYCLOPEDIA. Properties of aluminum foil & foil laminations. Modern Packaging Encyclopedia, 1954: 126 (1953).

A chart gives general, mechanical, and chemical properties, and permanence for aluminum foil and specialized foil products. 1 chart. R.A.S.

ASSOCIATIONS

ALLISON, E. C., and MILLER, D. J. B. At the British Paper and Board Industry Research Association. Tech. Bull. Tech. Sect., Brit. Paper and Board Makers' Assoc. 30, no. 5: 129-35 (October, 1953). [Abridgment]

The aims and purpose of the association, its organization, the nature of inquiries received, and the co-operation required from an inquirer are discussed. Seven examples are listed to illustrate the range of technical inquiries; in addition, six examples were described in greater detail in the original presentation to illustrate the laboratory investigations entailed. Many of these were also illustrated by samples and slides. E.S.

HOOD, NORMAN R. The British Paper and Board Industry Research Association. Chemistry & Industry no. 50: 1322-4 (Dec. 12, 1953).

The central research station of the association, established in February, 1945 and now in full operation at the St. Winifred's Laboratories, Welcomes Road, Kenley, Surrey, is discussed; property, buildings, equipment, staff, and investigational work are described. 5 illustrations. R.A.S

[RIDDELL, G. L.] PATRA's current packaging research. Paper Box Bag Maker: 124-5, 128 (September, 1953); *cf.* B.I.P.C. 24: 88.

Details of some of the long-term research work of PATRA's packaging program, which is described in the association's annual report for 1952-53, are

given. Reference is made to studies on the strength and design of containers and hazards to which they are subjected in transit and storage; strength of papers for bag making; protection of packaging materials against moisture, odor, light, insects, and mold; reproduction of climatic storage conditions; adhesives; cutting and creasing of carton board; and the effect of processing on transparent wrapping materials. R.A.S.

RIDDELL, G. L. The Printing, Packaging and Allied Trades Research Association. Chemistry & Industry no. 48: 1266-9 (Nov. 28, 1953).

The author traces the history of PATRA and describes briefly recent work of the Printing Division in letterpress, lithography, bookbinding, paper, ink, ink drying, and rheology; research of the Packaging Division in water-vapor permeability, mold and insect attack, and odor; and the library and information service available to members. 6 illustrations. R.A.S

BAGASSE

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Raw materials for more paper; the utilisation of bagasse. World's Paper Trade Rev. 140, no. 11: 771-2, 774, 776 (Sept. 10, 1953); *cf.* B.I.P.C. 24:133.

The text on pages 101-7 of the previous reference (dealing with the utilization and pulping of bagasse) is reprinted. R.A.S.

BARKERS AND BARKING

ANON. Demonstration of new type Swedish log barking machine at Lachine, Que. Pulp Paper Mag. Can. 54, no. 12: 181-2 (November, 1953); *cf.* B.I.P.C. 24: 88-9.

A demonstration of the Mira barker at Lachine, Que. and a decision by the Dominion Bridge Co. Ltd. to manufacture the Swedish machine are discussed. The description of the barker is similar to that in the previous reference. 2 illustrations. R.A.S.

BEATING

ELLEFSEN, Ø. Nitration as an analytical tool in the study of wood pulps. V. Some changes in the chemical and molecular properties of a pulp during the beating process. Norsk Skogind. 7, no. 11: 405-15 (November, 1953). [In English; Norwegian summary] *cf.* B.I.P.C. 24: 7.

By means of a special nitration-fractionation technique which has been used in cellulose research in previous papers of this series, changes in the chemical and molecular properties of a bleached sulfite pulp during beating in the P.F.I. laboratory mill have been investigated. This information was supplemented with the results of experiments from chain-length fractionation and sedimentation in the ultracentrifuge. From these results statistical evidence was found for the previously reported increase of the low-molecular "B" fraction during the beating process (*cf.* B.I.P.C. 22: 818). Paper-partition chromatography carried out on the "A" and "B" fractions proved that a selective attack on the chains had taken place. The material which was depolymerized and recovered in the "B" fraction had a sugar composition of a hemicellulosic nature, thereby indicating that the attack had been concentrated

on the hemicellulosic fractions of the pulp. A general chain-shortening effect during beating was not recorded, but the possibility of a simultaneous attack of this kind cannot be excluded. The results obtained during this investigation have further demonstrated the relationship between the classical α-, β-, and γ-fractions of cellulose on the one side, and the "A" and "B" fractions introduced by the nitration technique on the other. 7 tables, 3 figures, and 19 references. E.S.

BIRCH

OLOFSON, ÅKE. The morphological variation and forest value of different kinds of Swedish birch. Parts I and II. Svensk Papperstidn. 56, no. 20: 785-98; no. 21: 818-39 (Oct. 31, Nov. 15, 1953). [In Swedish; English summary]

Birch comprises about one eighth of the total Swedish wood capacity; in spite of this fact, birch and birch cultivation have received scant attention in Sweden, in contrast to Finland where the problems have been quite thoroughly investigated. The present article is an extensive discussion on the variations in wood quality (dimensions of tree, type of trunk and bark, color, presence of branches, etc.) of *Betula verrucosa* (I) and *B. pubescens* (II) growing in different sections of Sweden; the data are statistically evaluated. From the viewpoint of profitable wood utilization, the birches grown in middle and northern Sweden, particularly (I), are far superior to those in the southern parts; neither (I) nor (II) are desirable types in this location and both should be replaced by another and better local kind. With proper selection of the type suitable for a given site, birch is a fast-growing tree which responds well to correct treatment. 24 tables, 1 map, 85 figures, and 40 references. E.S.

BLEACHING—SULFATE

ANON. Camp's new bleach plant in operation. Paper Mill News 76, no. 52: 8-12, 14, 29 (Dec. 26, 1953); Paper Trade J. 137, no. 26: 20-3 (Dec. 25, 1953).

The new bleach plant of Camp Manufacturing Co. at Franklin, Va. was completed in September, 1953 and is now in operation. It provides two complete and independent lines, one for pine with a basic rated capacity of 250 tons/day, and one for gum with a basic rated capacity of 100 tons/day. The stocks are treated in separate chlorination towers, but may be combined in succeeding stages. The pine line consists of a low-density chlorination and high-density first caustic, hypochlorite, and second caustic stages. The gum line consists of a low-density chlorination and high-density first and second hypochlorite stages. Caustic stages in the gum line have been deferred for the present. The towers in the two hypo stages are all-purpose towers suitable for either hypochlorite or chlorine dioxide bleaching; the second hypochlorite tower will be changed to a chlorine dioxide unit by the Solvay process in the future. Provisions for this unit were made in the initial plans but deferred until the process had been proved. Details of the building, process equipment and instrumentation, and power and water facilities are given; a list of suppliers is appended in the first reference. 12 illustrations in the first reference and 5 in the second. E.S.

BOARD

BASLER, HERMANN. Causes and mode of reaction of the adhesive forces inherent in fibrous materials with reference to hardboard manufacture. Holz Roh- u. Werkstoff 11, no. 8: 297-302 (August, 1953). [In German]

Although certain valuable conclusions can be drawn from the experience gained during paper and board manufacture, this is not sufficient to explain the processes occurring during the manufacture of hardboard. The preliminary step of a hydrolysis represents a partial chemical process which is different in its effect from the pulping technique and which is concluded in the final (third) stage, the thermal treatment at temperatures much higher than those used in either paper or board manufacture. The intermediate step of defibering and hydration imparts a woodlike fibrous character to the final product and activates inherent bonding forces. Mason claimed for his (Masonite) process, in which no separate binder is employed, that lignin is activated and causes the bonding of his board; he also claimed that the presence "of all the substance from the original wood" without chemical degradation of the fibers is essential for the success of his method. This theory is contradicted by the German CTC process (patents by Basler assigned to Chemo-Techno-Company, Munich) which employs alkaline pulping methods and arrives at similar high-quality products, also without additional binder. The author postulates that the pentosans present in wood constitute the principal substances which may be activated to bonding agents. According to recent experiences, a mixed polymerizate of activated lignin and pentosans (which the author calls "Celloplast") is responsible for the phenomenon. In conclusion, a brief reference is made to the Celloplast process (trade name and patents applied for by Chemo-Techno-Company), which consists of three essential stages: a thermochemical prehydrolysis, defibering and hydration with particular observance of colloidchemical processes, and final pressing at elevated temperatures in which the mixed polymerizate Celloplast is activated to a highly efficient binder. The resulting products exhibit excellent water repellency (water absorption 6-8% in 24 hours). The method has been preferably developed for wet processing of wood waste, but may also be adapted to dry processing. 26 references. E.S.

ELMENDORF, ARMIN. Furniture core panels of wood waste. Proc. Wood Symposium "One hundred years of engineering progress with wood," Sept. 3-13, 1952, Chicago, Ill.: 95-9 (1952).

The author reviews the steps involved in German practices of manufacturing wood-shaving boards (I) and wood-chip boards for preparing thick-core panels out of wood waste for the furniture industry. The American process for manufacturing high-density, fine-wood particle boards (II) is also described. Board requirements for furniture panel cores with regard to flatness and dimensional stability, texture, hardness, density, strength, workability, and screw-holding power are listed, and estimates for the manufacturing cost of (I) and (II) in the United States are presented. The total manufacturing cost of (I) is estimated to amount to 13.5 cents/sq. ft., and of (II), to 11 cents/sq. ft. (I) exhibit the greater bending strength; however, (II), when properly made, will meet the minimum modulus of rupture of 2000 p.s.i. 2 tables and 4 figures. E.S.

BOARD—CONVERSION

BAUGHMAN, STANLEY. Scheduling, set-up and make-ready, and press adjustments. Fibre Containers 38, no. 11: 76-7 (November, 1953). [Abridgment]

Considerations to ensure efficient operation in a pressroom include scheduling (deciding proper press and necessary attachments and use of inks in darkening colors to eliminate frequent wash-up); manufacturer's joint; setting, alignment, and depth of scores; and adjustments necessary during operations. R.A.S.

FITZSIMMONS, P. A. The relationship of printing on corrugated boxes to advertising and sales. Fibre Containers 38, no. 11: 62, 67-8 (November, 1953). [Abridgment]

The advertising value of name printing on the corrugated shipping container as a sales promotion measure for product manufacturers is discussed. Problems in designing and producing printing on corrugated boxes are considered, and the fact that these processes justify adequate compensation is stressed. R.A.S.

HOFFMAN, ALFRED W. Effect of printing upon the functional properties of corrugated fibreboard boxes. Fibre Containers 38, no. 11: 79-80 (November, 1953). [Abridgment]

The results of a study carried out by Container Laboratories in an effort to evaluate printing efficiency from the standpoint of crush damage to corrugated fiberboard boxes are presented. Tests were made with three different flutes and 175- and 200-lb. test corrugated fiberboard boxes with measurements of board caliper and flat crush resistance. The results of the tests are shown in tables; the thickness of the combined board was reduced on the average of approximately 6% by printing. 2 tables. R.A.S.

MONTOUX, W. E. Printing inks for corrugated containers. Fibre Containers 38, no. 11: 73-4, 76 (November, 1953). [Abridgment]

The three fundamental types of ink used on corrugated containers (oil, moisture-set, and flexographic inks) are described. Developments have been made in the field of pigments (notably flushed colors), the use of numerous drying oils as vehicles, fluorescent ink, and the use of instrumentation. R.A.S.

ROSEN, HOWARD. Press operation, maintenance and control. Fibre Containers 38, no. 11: 77-9 (November, 1953). [Abridgment]

The author discusses important factors which affect the proper fabrication of a corrugated box when it is run through a printer-slotter, including printing crush, slotting, scoring, and trimming the length of the box blank. Steps to be taken to insure proper maintenance are listed; a quality control program is outlined and possible causes for crushed boxes, short sheets, crooked boxes, and poor printing or slotting are described. 1 table. R.A.S.

SEEGER, E. B. Future printer-slotter design & developments. Fibre Containers 38, no. 11: 68, 70-3 (November, 1953). [Abridgment]

Developments and design of the printer-slotter which are expected to be in use in the next year or two are outlined; they include a redesigned ink fountain, an arrangement allowing the handling of flexographic inks, and an economical means for handling three- and four-color printing. R.A.S.

SMITH, PAUL F. Shall we accept it? Fibre Containers 38, no. 11: 81 (November, 1953). [Abridgment]

Steps taken by the Scott Paper Co. to determine whether or not corrugated

boxes come up to the company's standards are outlined; they include evaluation of dimensions, scoring, slotting, and printing quality. R.A.S.

BOARD DRYING

HANSSEN, LEIF J. The heat economy in wallboard mills. Norsk Skogind. 7, no. 11: 367-77 (November, 1953). [In Norwegian; English summary]

The various factors which influence the heat economy and production capacity of driers for porous wallboard are discussed. Based on experiments with a new drier and satisfactory drying conditions, the author shows how capacity and heat consumption/kg. of wallboard vary with the readings of the dry- and wet-bulb thermometers in the drier; the importance of appropriate control of air quantities and pressures is explained. A summary of experimental results shows that the heat consumption/kg. of evaporated water varies considerably and indicates the necessity for better control during manufacture. A theoretical calculation of the heat consumption of hard wallboard is included; the results are compared with experimental data and possibilities for improvements are discussed. In conclusion, the heat consumption in the defibering operations in wallboard mills and possible heat savings are mentioned. A brief reference is also made to boilerhouse operation in Norwegian board mills. 3 tables and 4 figures. E.S.

BOARD SPECIALTIES

ANDRE PAPER BOX COMPANY, *San Francisco.* Pick-up basket boosts produce sales. Packaging Parade 21, no. 251: 55 (December, 1953).

Customer reaction to the company's new Pak-A-Long paperboard fruit basket is reported; the outstanding feature of the container is the patented Pak-A-Long handle. 2 illustrations. R.A.S.

ANON. Wire-and-corrugated berry tray. Boxboard Containers 71, no. 732: 30 (December, 1953).

A new container for berries consists of eight Fresher-Pak plastic baskets fitted into a two-section, corrugated shipping tray of moisture-resistant Weather Kote (trade name of Pioneer Division of Flintkote Co.). Two of these trays are placed one on top of the other and joined together with a wire loop. 4 figures. R.A.S.

MODERN PACKAGING. Carry-home motor oil. Modern Packaging 27, no. 4: 105-7 (December, 1953).

A machine-packed, open-end, carry-home carton for six cans of motor oil is described, which can be produced at high speed, is low in cost, saves board, and provides for convenient stacking. The cartoning unit and operation are also outlined. 7 illustrations. R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Package displays and promotion. Modern Packaging Encyclopedia, 1954: 601-4, 606, 608 (1953).

This section of the encyclopedia consists of the following articles: Successful merchandising displays—10 illustrations, p. 602-4; and Point-of-purchase impact—1 reference and 7 illustrations, p. 606, 608. R.A.S.

BOARD TESTING—PHYSICAL

HIGGINS, J. J. Evaluating the printability of boxboard. Am. Boxmaker 42, no. 12: 11-13, 37 (December, 1953); Fibre Containers 38, no. 12: 150, 152, 154 (December, 1953); *cf.* B.I.P.C. 23: 394.

The text of the article describing methods for evaluating the printability of boxboard is identical with that in the previous reference. 5 diagrams. R.A.S.

TURNER, H. DALE. Application of refining energy index concept to experimental evaluation of strength-yield relations for hardboard stocks. Tappi 36, no. 12: 549-52 (December, 1953).

Steam-cooked Douglas-fir pulps in yields ranging from 68 to 96% were refined for hardboard stocks in a 5-hp. single-rotating-disk refiner. Data for time-temperature-yield relations are presented, together with pulp-drainage times and corresponding hardboard strength values. The ratio of hardboard bending strength to energy consumed in refining, called the energy index, is shown to be significant in rationalizing a wide dispersion of strength-yield data. The energy index increases directly with decreasing yields. The theoretical energy demand-strength relation indicates a rapid decrease in energy consumption with decreasing yields down to approximately 85%, but a comparatively minor decrease for yields below 80%. 1 table, 7 figures, and 5 references. E.S.

CELLOPHANE

ALLEN, NELSON. Cellophane. Modern Packaging Encyclopedia, 1954: 84-6 (1953).

Properties, uses, code designations, types, and a brief history of cellophane as a packaging medium are given. 3 tables and 3 illustrations. R.A.S.

ANON. Packaging of newspapers. Paper Sales 13, no. 12: 15, 60 (December, 1953).

The *Philadelphia Inquirer* is offering its distributors cut-to-size sheets of cellophane of a specially coated water-resistant type for the wrapping of newspapers for delivery on a rainy day. 2 illustrations. R.A.S.

MYHRAN, DEAN. There's a boom around the corner. Paper Sales 13, no. 12: 12-14, 57 (December, 1953); *cf.* B.I.P.C. 23: 874.

A description of the cellophane prepackaging program at L. Bamberger & Co., Newark, N.J., similar to that in the previous reference, is given. 6 illustrations. R.A.S.

CELLULOSE

HEUSER, EMIL. Cellulose. Tappi 36, no. 12: 157A (December, 1953).

A summary of the discussion presented at the two sessions of the Seventh Annual Seminar of the Pacific Section of TAPPI at Seattle, Wash. and Portland, Ore. in September, 1953 is presented. It dealt principally with recent investigations and findings on the morphological structure of the cotton and wood fiber—as revealed by the light and electron microscopes. The implications of the crystalline-to-amorphous ratio of the fine structure of the cellulose fiber also received consideration. E.S.

MARK, HERMANN. Some advances in the chemistry of cellulose. Holz Roh- u. Werkstoff 11, no. 7: 257-60 (July, 1953). [In German]

A review of recent developments in the molecular structure of cellulose is presented. 2 figures and 22 references. E.S.

STAUDINGER, HERMANN. Macromolecular compounds. [382] Cellulose. [113] Retrospects and prospects on the elucidation of the constitution of cellulose. Holz Roh- u. Werkstoff 11, no. 7: 260-2 (July, 1953). [In German] *cf.* B.I.P.C. 24: 10.

A review with 23 references is presented. E.S.

CELLULOSE—HEMICELLULOSE

THOMPSON, JAMES O., SWANSON, JOHN W., and WISE, LOUIS E. Hemicelluloses and arabogalactans as beater adhesives. Tappi 36, no. 12: 534-41 (December, 1953).

Representative and degraded hemicellulose fractions from aspen, black spruce, Douglas-fir, and slash pine have been examined as beater adhesives. The softwood hemicelluloses were found to be superior to those of the hardwood in improving the strength properties of handsheets—those of higher mannan (hexosan) content being the more effective. The magnitude of the strength improvements obtained with the higher mannan contents was about the same as that obtained with locust bean gum. Severe hydrolytic degradation of the hemicelluloses caused a marked reduction in adhesive strength. This indicated the existence of a critical minimum D.P. The factors influencing the effectiveness of hemicelluloses as beater adhesives are discussed. Similar experiments with arabogalactans from western larch, black spruce, and Douglas-fir showed that these highly branched polysaccharides did not contribute to sheet strength. 10 tables, 2 figures, and 28 references. E.S.

WISE, LOUIS E. The hemicelluloses. Tappi 36, no. 12: 155-6A (December, 1953).

A summary of the discussion presented at the two sessions of the Seventh Annual Seminar of the Pacific Section of TAPPI at Seattle, Wash. and Portland, Ore. in September, 1953 is presented. In the first session, fundamental studies were covered, with particular reference to the difficulty in differentiating between wood cellulose and hemicelluloses. The second session dealt principally with the technological significance of the hemicelluloses. Possible avenues for future research were listed at the end of both sessions. 30 references. E.S.

CHEMICAL TESTING—CELLULOSE—ACCESSIBILITY

RICHTER, G. A., HERDLE, L. E., and GAGE, I. L. Accessible cellulose as measured by sorption of sulfuric acid. Ind. Eng. Chem. 45, no. 12: 2773-9 (December, 1953).

Industrial processes for the manufacture of cellulose esters frequently use a preparatory soak of the fiber in a fatty acid solution of the sulfuric acid catalyst. This study was designed to measure the degree to which the catalyst is sorbed by celluloses from the solution in such a stage and to correlate that sorption with the noncrystalline cellulose content. The percentage of sulfuric acid sorbed from acetic acid by water-swollen cellulose depends not only on

conditions maintained in the sorption process, but on the history of the cellulose itself. For most celluloses sulfuric acid sorption and water-vapor sorption at 95% R.H. show a linear relationship, indicating that the measurement of sulfuric acid sorption from acetic acid is a means of estimating a type of cellulose accessibility. The best direct relationship is found when the *M* values (sulfuric acid sorption from concentrated sulfuric acid solutions in acetic acid obtained by extrapolation of the isotherms) are plotted against the water-vapor sorption, in which case a straight line passing through or near the origin is obtained. If the sulfuric acid sorption from a dilute solution of sulfuric acid in acetic acid is plotted against the water-vapor sorption for a number of sulfite pulps and linter-base celluloses, a straight line results with an intercept on the vapor-sorption axis. Unmercerized kraft pulps show sulfuric acid sorptions too low to fall on this line. The results are interpreted as a demonstration that the capacity of the water-accessible fractions for sorption of sulfuric acid can vary between celluloses, indicating fundamental differences in the properties of the so-called "accessible" fractions in celluloses of materially different histories. The higher accessibilities measured by vapor-sorption methods with increasing severity of strong alkali treatment are paralleled by sulfuric acid sorption. This is a contribution to the basic knowledge of factors which determine catalyst sorption and are important in the preparation of cellulose for esterification. 2 tables, 12 figures, and 10 references.

E.S.

CHEMICAL TESTING—FORMALDEHYDE

AENISHÄNSLIN, R., and SCHÜRCH, A. Quantitative determination of formaldehyde aminoplasts on cellulosic fibers. Ciba Rev. no. 97: 3497-9 (April, 1953).

The resin finish is stripped from the fibers by boiling 1-2 grams of the material for one hour with 50 ml. of 0.02 *N* hydrochloric acid. The acid extract and 150 ml. of water washings are treated with 10 ml. of concentrated sulfuric acid and distilled into a receiver containing water until a white vapor appears in the receiver flask. The formaldehyde in the distillate is determined by oxidation with an alkaline iodine solution. The residue in the distilling flask is further heated with a catalyst and the nitrogen is found by the usual Kjeldahl method. 2 figures.

B.L.B.

CHEMICAL TESTING—PULP—CUPRIETHYLENE VISCOSITY

WETZEL, F. H., ELLIOTT, J. H., and MARTIN, A. F. Variable shear viscometers for cellulose intrinsic viscosity determination. Tappi 36, no. 12: 564-71 (December, 1953).

Viscosities of a number of samples of cellulose have been measured in 0.5 *M* cupriethylenediamine using Ubbelohde, modified Wagner-Russell, and Brookfield viscometers. From these data, intrinsic viscosities ($[\eta]$) were calculated using the one-point method proposed by Martin (*cf.* B.I.P.C. 22: 9), and compared with values obtained by the multipoint procedure at the normally encountered shear rates and also with values obtained at zero shear rate. For solutions having $[\eta]$ $C = 3.0 + 0.5$, where C is concentration in grams/100 ml., it was found that for samples whose $[\eta] = 10$ or lower, the solutions are Newtonian and hence the measured values are independent of the rate of shear. For samples having a higher $[\eta]$, the solutions are shear sensitive. In the range $[\eta] = 10$ to 16, $[\eta]$ may be obtained by the one-point method with moderate accuracy using shear rates in the range of 50 to 250 $sec.^{-1}$. Samples having $[\eta]$ greater than 16 show marked shear sensitivity, and viscosities should be obtained at as low a shear rate as feasible. Intrinsic viscosities, obtained from such data, will approach the theoretically sound value calculated from

data at zero rate of shear. It is recommended that viscosities be measured at a maximum shear rate of 50 sec.$^{-1}$. Reliable intrinsic viscosities are obtained from these observed viscosities by the one-point method. A simple rapid rotational viscometer is suggested for control use and a capillary instrument for referee use. 7 tables, 7 figures, and 12 references. E.S.

CHEMICAL TESTING—WOOD—LIGNIN VALUE

KRATZL, KARL. The qualitative determination of lignification. Holz Roh- u. Werkstoff 11, no. 7: 269-76 (July, 1953). [In German]

A review of botanical and chemical methods is presented. 6 figures and 65 references. E.S.

CHEMICALS

ANON. Hercules research program develops rosin, cellulose for papermakers' use. Paper Mill News 76, no. 49: 94, 108 (Dec. 5, 1953).

The contributions of the Hercules Powder Co. to the pulp and paper industry are reviewed. The company is not only one of the largest producers of papermaking chemicals (rosin sizes, wet-strength resins, defoamers, wax emulsions, cotton linters, carboxymethylcellulose, etc.), but through its Paper Makers Chemical Department provides efficient technical service to its customers. New techniques and instruments have been developed for measuring certain properties of paper, some of which are briefly listed. E.S.

ANON. New push for paper. Chem. Week 73, no. 23: 40, 42 (Dec. 5, 1953); Paper Mill News 77, no. 1: 16 (Jan. 2, 1954).

The Naugatuck Chemical Division of the U. S. Rubber Co. has begun an intensified research program, headed by Harold Spector (previously of St. Regis Paper Co.) for the purpose of entering the paper-chemicals market. Special laboratory facilities have been set up at the headquarters of the division at Naugatuck, Conn. The goals are new and improved coatings, binders, latices, wet-strength additives, and similar items. Now in development are GR-S latices for beater addition, grease-resistant polymer coatings, and plastic latices for stiffening, binding, coating, and sizing. Tied in with the laboratory is a pilot plant for trial production of materials. 5 illustrations in the first and 1 in the second reference. E.S.

CALKIN, JOHN B. Uses of certain chemicals in the pulp and paper industry. Paper Mill News 76, no. 49: 56, 60 (Dec. 5, 1953).

The author discusses chemicals used in the pulp and paper industry, especially those whose use is expanding through research and development for new uses and products. Examples of improved wax performance through the addition of chemicals in the form of antioxidants, wet-strength resins, plasticizers, and plastics; the use of an emulsified aromatic oil for pitch control; an aromatic solvent for the removal of pitch and asphalt from machinery; pulping with sodium xylenesulfonate; and the development of additive lubricating oils for paper machinery are given. R.A.S.

ELIAS, ROBERT T. Ts'ai Lun was no chemist; but now! Paper Mill News 76, no. 49: 44, 46, 48, 50, 52, 54, 112 (Dec. 5, 1953).

The contributions of chemistry to modern pulp and paper manufacture are

discussed, including chemical advances in pulping, bleaching, deinking, stock additives, foam killers, internal and surface sizing, coating, and specialty applications. 117 references. R.A.S.

KUMBLAD, W. S. Some developments in petroleum derivatives. Paper Mill News 76, no. 49: 110, 112 (Dec. 5, 1953).

The author describes five developments in petroleum derivatives for the paper industry: paraffin waxes of improved strength and flexibility (*cf.* B.I.P.C. 23: 512); improved microcrystalline waxes with a balance of laminating strength, flexibility, and acceptable performance in staining, strike-through, and blocking; an emulsified aromatic solvent as a digester aid in sulfite pulping and pitch control; a defoaming agent for the effluent treatment of pulp and paper mills; and the use of waste sodium sulfide solutions from caustic scrubbing of petroleum hydrocarbons for sulfate pulping in mills within economical shipping distance of refineries. E.S.

MEIER, E. J. Eight billions plus . . . Paper Mill News 76, no. 49: 114 (Dec. 5, 1953).

During 1952 the pulp and paper manufacturers shipped products totaling over eight billion dollars in value; for every pound of this product, approximately 0.25 pound of chemicals was consumed. The author discusses some of the recent developments in new papermaking chemicals by the American Cyanamid Co., including Cyfor fortified rosin sizes, light-colored Accobrite rosin sizes, Melostrength wet-strength agents, Cyron alkaline sizing agents, and Azite coating liquefiers for imparting scuff resistance. R.A.S.

PAPER MILL NEWS. Chemicals in paper making. Paper Mill News 76, no. 49: 58, 60 (Dec. 5, 1953).

An alphabetical list of the chemicals used in the manufacture of paper is presented. 1 table. R.A.S.

CHIPS

SHOLD, K. M. How chips are handled at Port Townsend. Paper Trade J. 137, no. 22: 16, 18 (Nov. 27, 1953).

The author describes the flow of chips at the Port Townsend Div. of Crown Zellerbach, where 90% of the wood used (principally Douglas-fir, hemlock, and cedar) is received already chipped from outside sources, such as sawmills and plywood mills in the vicinity. Delivery is made by water with the chips carried in barges towed by tugboats. On arrival at the mill, the chips are unloaded by three pneumatic unloading systems at the rate of 15 to 20 units/hour (a unit of chips is 200 cu. ft.). The chips are sucked to the mill roof, pass a cyclone to the unloader, from where they are discharged to storage bins or belt conveyors which carry them to the digester hoppers. Cranes with clam-shell type buckets are used for later withdrawal of chips from the storage bins. 3 illustrations. E.S.

CORROSION

ANON. "Rimmed steel" digesters at Camas mill. Pulp & Paper 27, no. 13: 102 (December, 1953); *cf.* B.I.P.C. 24: 187.

Crown Zellerbach Corp. completed the installation of two stationary, rimmed-steel digesters constructed by A. O. Smith Corp. at its Camas, Wash. mill to replace two of the plant's ten rotary digesters. The new units in-

corporate novel features designed to hold corrosion to a minimum; the liquor is charged at the bottom to avoid splashing of white liquor on hot digester walls (hot-plate boiling action). 1 illustration. E.S.

LIENTZ, JAMES R. Why modern kraft digesters corrode; partial blame is placed on changes in steels. Pulp & Paper *27*, no. 13: 48, 50 (December, 1953).

A review of digester-corrosion research news presented at the eighth TAPPI Engineering Conference in Montreal, Oct. 26-28, 1953 is presented. E.S.

MACLEAN, HAROLD, and GARDNER, J. A. F. Heartwood extractives in digester corrosion. Pulp Paper Mag. Can. 54, no. 12: 125-30 (November, 1953).

The attention of the alkaline pulping industry is drawn to the fact apparently not previously considered, that organic metal complexing or sequestering agents can participate in the corrosion of carbon steel digesters. These agents occur as extractives in some pulpwoods or are generated by degradation reactions during cooking. In a search for the source of accelerated digester corrosion encountered in the kraft pulping of western red cedar (*cf.* B.I.P.C. 24:273), fractions of the extractive were tested for corrosive potentiality in laboratory experimental alkaline pulp cooks. It was found that corrosion was caused by the presence of two types of metal-chelating agents. In the one, the thujaplicins, the metal chelate complex forms only in the absence of alkali. Corrosion from this source is, therefore, confined to steaming and filling operations. In the other, the phenolic fraction, the metal complex formed with iron because of its great stability to alkali will cause the dissolution of iron under the conditions of alkaline pulping. The belief that catechol groupings were responsible led to tests with catechol and derivatives which showed that such compounds are very corrosive to steel under the conditions of alkaline pulping. Taxifolin, a catechol derivative and a heartwood constituent of Douglas-fir, also proved to be corrosive. The results and their significance are discussed in detail in view of the current widespread interest in determining the sources of digester corrosion in the alkaline pulping industry. 3 tables, 1 figure, and 17 references. E.S.

ROALD, BERNT. Corrosion in sulphate digesters. Norsk Skogind. 7, no. 11: 382-8 (November, 1953). [In English; Norwegian summary]

A corrosion survey has been made of all digesters in operation in Norwegian sulfate mills, comprising visual inspection of scale and corrosion patterns and Audigage wall-thickness measurements. The corrosion rates were found to be throughout less than 0.9 mm./year. Repeated Audigage measurements in two mills with recently installed spray-type recovery furnaces indicate that a considerable increase in the corrosion rate of these mills has taken place. A comparison of Norwegian and similar data from the United States and Canada shows that the corrosion rates in Norwegian digesters are of the same magnitude as those encountered in other countries, although the Norwegian mills have not been subjected to the excessive attack suffered in some foreign mills. The corrosion rates are compared in terms of mm./1000 cooks rather than mm./year, since the amount of corrosion appears to depend on the number of cooks rather than the years of service. Possible causes of digester corrosion are reviewed and discussed with regard to variables in steel composition and structure, liquor composition, and digester

operating practices. The causes of the corrosion are still not adequately understood, particularly the mechanism of the corrosion process and the factors governing the formation of protective scales. It seems probable, however, that a better understanding of these factors will lead to corrective measures which will keep the corrosive attack on unlined digesters within reasonable limits, so that the need for expensive and troublesome liners is eliminated. It is recommended that all sulfate digesters be regularly inspected to detect and, if possible, to correct conditions causing localized attack before serious damage results. Such inspections will also keep mill management informed about the extent and current rates of attack in the digesters. 5 figures and 14 references. E.S.

RUUS, LENNART, and STOCKMAN, LENNART. Investigations concerning corrosion problems in sulfate digesters. Svensk Papperstidn. 56, no. 22: 857-65 (Nov. 30, 1953). [In Swedish; English and German summaries]

Increasing attention is being paid in recent years to the problems of kraft-mill corrosion, particularly digester corrosion, since the construction materials of sulfate digesters are especially subject to attack. In 1951 a Sulfate Digester Corrosion Committee sponsored by the Swedish kraft industry was formed at the Central Laboratory for the Cellulose Industry. The work so far dealt principally with the corrosiveness of the various constituents of the white liquor. Data and results obtained by different cooperating mills to date indicate the following: The composition of the white liquor has a definite effect on corrosion, which increases with increasing concentrations of sodium sulfide, caustic soda, sodium thiosulfate, and sodium polysulfide; however, the corrosion rate is only slightly affected by sodium sulfide and caustic soda within the concentrations of these two chemicals normally employed in white liquor. It is possible to decrease or even stop corrosion by the use of suitable inhibitors; however, those so far investigated were either too expensive or provided very irregular protection. The corrosion rate seems to increase with higher carbon and silicon contents of the steels. Different welding materials were found to exhibit various corrosion resistances; those with a low silicon content seemed to be less affected. 8 tables, 6 figures, and 8 references. E.S.

DRYING—PAPER

GILLIS, J. J. A new concept of paper mill drying. Tappi 36, no. 12: 135-7A (December, 1953).

The author suggests a new drying system applicable to paper and board which is the outgrowth of his company's experience with the drying of inks in all types of presses and of roll-applied coatings. Steam at elevated temperatures and comparatively low pressures would be directed onto both sides of a moving web supported on a suitable screen. The unit would be completely enclosed to permit the maintenance of a slight vacuum on the entire machine. A complete cycle would be involved, because the steam from its initial high temperature down to the liquid phase would be used. The evaporated vapors would become part of the drying medium. Details of the proposed unit and its financial and operating advantages are outlined. E.S.

EDUCATION

BIRCHARD, W. H. Moulding better calibre college graduates demands more practical attention to primary education to provide

useful men for industry. Pulp Paper Mag. Can. 54, no. 12: 107-8 (November, 1953).

The lack of basic knowledge of reading, writing, and arithmetic being found in college graduates leads the author to a criticism of primary education. Contact between schools and industry is recognized as a valuable tool for providing information to both students and the industry. R.A.S.

HERNES, TORALF. The work connected with the recruiting of scientific personnel. Norsk Skogind. 7, no. 11: 378-81 (November, 1953). [In Norwegian]

The author outlines the steps taken in postwar Norway for supplying the required research workers for the new and enlarged domestic institutions and the necessary qualified teachers for training promising candidates at Norwegian educational centers. The problems involved in the granting of scholarships for studying in foreign universities are discussed and statistical data on country and field selected, number of scholarship holders returned to their native country, etc. are given. The Norwegian scientific-manpower requirements for 1958 are estimated. 2 tables and 3 figures. E.S.

ENGINEERING

ANON. A mill on wheels builds for Kimberly-Clark. Paper Trade J. 137, no. 26: 18-19 (Dec. 25, 1953).

A mobile division of the Staff Engineering Dept. of Kimberly-Clark Corp. provides the corporation's distant plants with skilled engineers, technicians, and mechanics, and the necessary men and equipment for handling construction jobs required by any one of the many plants. 4 illustrations. R.A.S.

EUCALYPTUS

STEWART, C. M. The non-resistant components of the wood of *Eucalyptus regnans* F. Muell. I. Water-soluble hemicellulose. Australian J. Chem. 6, no. 4: 425-30 (November, 1953).

A xylosan uronide material has been extracted, by means of water, from the residues remaining after exhaustive methanol extraction (at 150°C.) of the wood of *Eucalyptus regnans* F. Muell. The fractions isolated from the xylosan uronide material appear to be chemically similar, the observed fractionation depending on physical properties. 1 table and 24 references. E.S.

STEWART, C. M., and FOSTER, D. H. The non-resistant components of the wood of *Eucalyptus regnans* F. Muell. II. Polysaccharide constituents. Australian J. Chem. 6, no. 4: 431-8 (November, 1953).

It is shown that the wood of *Eucalyptus regnans* F. Muell., on hydrolysis with *N* sulfuric acid, yields an aldobiuronic acid containing 4-O-methyl-D-glucuronic acid and D-xylose residues. The composition of the nonresistant hemicellulose of *E. regnans* wood is compared with hemicelluloses obtained from various sources by other workers. The evidence suggests that the nonresistant hemicellulose *in situ* is composed, basically, of a poly-(hexaxylose 4-O-methyl-D-glucosiduronic acid) complex containing, in addition, acetyl groups and possibly galactose residues. 2 tables, 1 figure, and 26 references. E.S.

FIBER—STRUCTURE

GRANT, JULIUS. The importance of non-woody fibres in the chemical technology of cellulose. World's Paper Trade Rev. 140, no. 10: 684, 686, 688 (Sept. 3, 1953).

Reference is made to the difference in the actual physical structure of the fibers of woods and nonwoody plants (I), including cereal straws, bagasse, esparto, bamboo, cotton linters, etc., which results in much less drastic cooking requirements for the second group. Problems associated with pulping processes and chemical costs of (I) are reviewed briefly. The final products should not be regarded automatically as substitutes for wood pulp, since the fibers produced have characteristic properties which make them of special value in certain cases. During times of shortages they may assist in satisfying general pulp demands in certain areas. 2 tables. E.S.

LANGE, PAUL W. The distribution of the components in the plant cell wall. Part V. Nonabsorptive light losses in microspectrophotometry of biologic material; an experimental study on cellulose fibres esterified with *p*-phenylazobenzoyl chloride. Svensk Papperstidn. 56, no. 21: 807-17 (Nov. 15, 1953). [In English; German and Swedish summaries] *cf.* B.I.P.C. 23: 553.

Light scattering is the most serious cause of nonabsorptive light losses in microspectrophotometry of biological material. Following a short review of the problem, possible methods for overcoming it are discussed. Four experiments on cellulose fibers esterified with *p*-phenylazobenzoyl chloride are described in which it is shown that swelling of the esterified fibers in pyridine reduces the nonabsorptive light losses to about 5%. In the first experiment it is demonstrated that visible optical heterogeneities in the esterified fibers vanish when the fiber swells in pyridine. In the second experiment, the magnitude of nonabsorptive light losses is estimated from the light absorption curve outside the selective absorption region of a spot in the cell wall of a cross section of the esterified cellulose fiber. The distribution of light behind the esterified fiber within and without the angular aperture determined by the incident light was studied in the third experiment. In the fourth and final experiment the light absorption in cross sections of esterified fibers was measured as a function of section thickness. The last results are discussed in the light of Duntley's theory (*cf.* B.I.P.C. 12: 244) of the optical properties of diffusing materials. In an appendix by Saara Asunmaa, methods for preparing cross sections of short fibers and for measuring their thickness are described. 2 tables, 16 figures, and 11 references. E.S.

FILTERING SPECIALTIES

R. N. H. Carbon cohort for diatoms. Ind. Eng. Chem. 45, no. 12: 15A, 17A (December, 1953).

Reference is made to the development of Nerofil, a carbon filter aid prepared by Great Lakes Carbon Corp. on a pilot-plant scale and introduced on a semicommercial basis; it can be used under alkaline conditions where diatomaceous earth cannot be employed. Different applications are under investigation; one possible large-scale use of Nerofil is the removal of calcium carbonate from alkaline lignosulfonate liquors. 2 figures. E.S.

FOAM

BERG, HARVEY E. Introduction to film, "Potential hazards" [of foam] Tappi 36, no. 12: 148A (December, 1953).

A paper mill is a more complex foam-producing system than any other industrial operation because of the many variables involved. The mechanisms of defoaming action include penetration, spreading, displacement, and film condensation; an effective defoamer should provide more than one of these mechanisms. The two generally observed phenomena of antifoam action of importance to the paper industry are bubble coalescence and bubble rupture. The presentation of a film demonstrating these principles followed. E.S.

CUMPER, C. W. N. The stabilization of foams by proteins. Trans. Faraday Soc. 49, no. 11: 1360-9 (November, 1953).

The ability of three crystalline proteins (bovine β-globulin, pepsin, and insulin) to stabilize the dispersion of air in water has been studied in two ways: in part 1, by passing air continuously through a protein solution and observing the foam formed and, in part 2, by measuring the average life of individual bubbles formed under the surface of protein solutions and under spread protein monolayers. The effects of changing the protein concentration, pH, and ionic strength of the solutions were studied and the results correlated with previous observations (*cf.* Trans. Faraday Soc. 46: 235-53 [1950]) on the mechanical properties of films of the same proteins. An attempt is made to explain the observations in terms of three successive processes in the formation of protein films: adsorption, surface denaturation, and finally coagulation. It is concluded that only surface-denatured protein is effective in stabilizing the air bubbles. 4 tables, 4 figures, and 26 references. E.S.

WARD, JOHN E., HALL, DANIEL H., SNOOK, CLARK E., and LIGHTHIPE, CHARLES. Improving sheet formation. Tappi 36, no. 12: 147-8A (December, 1953).

Following a brief discussion of the benefits to be derived from breaking up the air bubbles in the stock through the application of a defoamer, the authors describe the additional benefits of improved drainage and better sheet formation on the paper machine and increase of effective screening capacity in pulp-handling equipment which result from its use. The best practice is to add enough of the material at each point where foam is generated to take care of the foam at this particular point; it is generally not the best plan to add a large slug at the beginning and count on its carrying through to take care of foaming at all points in the system. Because of differences in furnish, stock preparation, and paper-machine operation, the use of a defoamer cannot be expected to produce all the benefits mentioned in any given sheet. E.S.

WIRPSA, ANTHONY. Foam on the paper machine—causes and cures. Tappi 36, no. 12: 146-7A (December, 1953).

Foaming liquids in the paper industry are not constant in nature and, as a result, it is virtually impossible to determine by formula in the laboratory how well one defoamer will work as compared with another. Various ways of suppressing foam are discussed in a general way, and the need for cooperation between afflicted mill and supplier and further panel discussions on the subject is emphasized. E.S.

FORESTS AND FORESTRY

ANON. Sweden—forest resources and forest industry. Norsk Skogind. 7, no. 11: 352-9 (November, 1953). [In Norwegian]

Statistical data for the Swedish sawmill, wallboard, pulp, and paper industries, principally for the period 1950-52, are presented. The per capita consumption in 1952 was 73 kg., as compared with 57 kg. in 1937. 13 tables.
E.S.

HOYT, H. H. New Brunswick forest management regulations. Pulp Paper Mag. Can. 54, no. 12: 146, 149 (November, 1953).

The author briefly outlines the forest management regulations for Crown land in New Brunswick. These regulations provide for leasing of the land under timber, sawmill, and pulp and paper licenses; provisions of the Crown Lands Act are reprinted. R.A.S.

PLACE, I. C. M., and THOMSON, C. C. History and description of the Acadia Forest Experiment Station. Pulp Paper Mag. Can. 54, no. 12: 158, 161, 164 (November, 1953).

The development of the experiment station is traced since its establishment in 1930; the forest area serves as a silvicultural practice area and for experimental forest research. A description of the region is given, including topography, geology and soil, forest cover, and climate. 2 tables. R.A.S.

RUDEN, TOLLEF. Impressions from German tree-breeding stations. Norsk Skogind. 7, no. 11: 416-22 (November, 1953). [In Norwegian; English summary]

The author describes research work and tree-breeding activities carried out by some scientific institutes and private firms in Germany. 5 illustrations.
E.S.

THE TEXAS FOREST SERVICE. Forest genetic research for fiber production. Southern Pulp Paper Mfr. 16, no. 12: 40, 43-6 (December, 1953).

The forest-tree improvement research program which the organization began in 1951 is described; projects of interest to the pulp and paper industries discussed include the genetics of wood fibers and their variation and control. Experiments undertaken at present are directed toward determining the part which genetics plays in the determination of wood density. Other phases of the genetics problem being studied are the development of a drought-hardy strain of loblolly pine, the analysis of outstanding seedlings, and the study of racial variations of the four major southern pines according to region. 4 illustrations. R.A.S.

WEBB, L. S. Forestry research by a Canadian pulp and paper company. Pulp Paper Mag. Can. 54, no. 12: 174, 176-7 (November, 1953).

The author gives reasons why private research is viewed as a necessity as well as an indication of a progressive policy by the Canadian International Paper Co.; the policy of the company in the development of practical research is given. The company operates two large research stations at the present time—the Harrington Tree Farm and the Causapscal Forest Research Station, the management and research projects of which are outlined.
R.A.S.

GUMS AND RESINS

CUSHING, M. L. Natural gum products in the production of paper containing mineral fillers. Tappi 36, no. 12: 140-1A (December, 1953).

Lycoid products including guar and locust bean gums help to increase the strength of sheets containing mineral fillers, such as clays, carbonates, titanium pigments, and the like; they compensate for the normal loss in strength in the presence of these fillers. Other benefits resulting from the application of Lycoids are improved formation, less fuzz, a decrease in two-sidedness resulting from changes in the distribution of the fillers in the sheet, and improved filler retention, particularly in groundwood and other short-fibered pulps. The best time to add the gum is after all mechanical treatment has been completed, at the fan pump, regulator box, headbox, etc. The recommended amount of Lycoid is 1.25 parts for every 100 parts of filler. 3 tables. E.S.

INSECTS AND VERMIN

ALDAMA, R., and CAMPS, J. M. Studies on the protection of paper from the destructive action of insects. Publ. inst. biol. apl. 5: 123-33 (1948); PATRA Packaging Abstr. 10, no. 9: 637 (September, 1953). [Original in Spanish; abstract in English. Abstract only available]

An account is given of investigations in Spain on the possibility of incorporating insecticides into paper during manufacture, to render it immune from attack by insects, principally *Lepisma saccharina* L. The main results of the numerous tests are shown on a graph, from which it appears that about 10% barium fluoride or barium fluosilicate in the finished paper gave complete or almost complete protection against *Lepisma*. Calcium fluoride was less effective. E.S.

INSTRUMENTATION

WALTER, LEO. Instrumentation in pulp & paper industry; progress of aids to closer production control. World's Paper Trade Rev. 140, Technical Convention no.: 52, 54, 59-60, 62, 64, 66 (November, 1953); *cf.* B.I.P.C. 23: 722.

The information presented in the article is essentially the same as that in the previous reference. 7 figures and 10 references. R.A.S.

WALTER, LEO. Preventive maintenance. Pulp Paper Mag. Can. 54, no. 12: 121-4 (November, 1953).

General rules for instrument maintenance and directions for the upkeep and preventive maintenance of special instruments (dial thermometers, dial pressure gages, and control instruments) are given. 1 table and 3 references. E.S.

JUNCUS MARITIMUS

ANON. Pulp & paper from Israeli *Juncus;* successful trials at Scottish mill. World's Paper Trade Rev. 140, no. 5: 351 (July 30, 1953).

Successful trials on a commercial scale have recently been carried out at a Scotch mill in the production of cellulose and various grades of paper

(duplicator paper, a high-finish cream wove printing, and a strong cartridge paper) from *Juncus maritimus*, found in the Araba region of the Negev desert in Israel. The trials were carried out along the lines of the accepted soda process used for esparto grass; the *Juncus* is easily processed by the same machinery and under the same conditions of cooking and bleaching, yielding a good quality pulp. R.A.S.

LIGNIN

FREUDENBERG, KARL. The biogenesis of lignin. Holz Roh- u. Werkstoff 11, no. 7: 267-9 (July, 1953). [In German]

A resume of the author's recent work on two lignin intermediates, coniferyl alcohol and pinoresinol derivatives, is presented. E.S.

JAYNE, JACK E. A study of the alkaline nitrobenzene oxidation of chlorite lignin. Tappi 36, no. 12: 571-6 (December, 1953).

Chlorite lignin preparations recovered from acidified chlorite holocellulose liquors of slash pine and black spruce were subjected to alkaline nitrobenzene oxidations. Vanillin, 6-chlorovanillin, and vanillic acid were isolated in maximum yields of 3.7, 2.3, and 5.3% (based on chlorite lignin), clearly establishing that chlorite lignin is built up from guaiacyl nuclei as is the lignin from which it was derived. The partially oxidized nature of chlorite lignin, previously indicated by its high carboxyl content, was confirmed by a higher ratio of acid to aldehyde than is found in similar treatments of wood or other lignin preparations. Extensive use was made of chromatographic analysis to achieve separations not possible by other techniques. Chromatographic evidence indicated the absence of 5-chlorovanillin among the products of the oxidation; likewise, no appreciable quantity of 6-chlorovanillic acid was formed. A new nitrobenzene reduction product, *p*-phenylazobenzoic acid, was isolated. Oxidations performed on vanillin, 6-chlorovanillin, and vanillic acid resulted in 74 to 81% recoveries of unchanged starting materials. The aldehydes were partially oxidized to the corresponding acids and also underwent partial demethylation to the corresponding dihydroxy compounds. The degradation products of vanillic acid did not include simple decarboxylated or demethylated compounds. 4 tables and 20 references. E.S.

LUBRICATION AND LUBRICANTS

SHELL OIL COMPANY. Lithium grease meets all purpose needs of paper manufacturer. Paper Mill News 76, no. 52: 15-16 (Dec. 26, 1953).

Case Brothers, Inc., of East Hartford, Conn., manufacturer of paper stock for the electrical industry, has now standardized on a single grade of lithium-base grease (Shell Alvania no. 2) for all mill-lubrication requirements. 1 table and 2 illustrations. E.S.

MACHINERY—CALENDERS

ARDICHVILI, GEORGES. Modifying temperature distribution over calender rolls by electro-magnetic induction. Brit. Plastics 26, no. 294: 400-1 (November, 1953).

A temperature-compensation device based on electromagnetic induction is described with which the unevenness in temperature distribution over the surface of heated calender rolls (principally used for plastics or rubber) can be satisfactorily corrected. 2 figures. E.S.

MACHINERY—CONVERTING MACHINERY

MODERN PACKAGING ENCYCLOPEDIA. Fabricating and handling equipment. Modern Packaging Encyclopedia, 1954: 489-92, 494, 496-502, 504, 506, 510, 512-13, 516, 519, 524 (1953).

Illustrated descriptions are given for numerous different pieces of converting equipment. Authors and titles of the individual articles in the section are: Anon. Equipment for making rigid packages—8 illustrations, p. 490-1; Anon. Equipment for making flexible packages—6 illustrations, p. 492, 494, 496; Holstebro, Kaye. Package-handling equipment—7 illustrations, p. 497-9; Booth, George L. Coating and laminating equipment—5 illustrations, p. 500-2, 504; Anon. Slitters, cutters, sheeters, rewinders—6 illustrations, p. 506; Smith, Sherman L. Stapling and stitching—7 figures, p. 510, 512; Anon. Equipment for applying tape—2 illustrations, p. 513; Anon. Steel strapping—2 illustrations, p. 516; Hall, Victor C. Using gadgets effectively, p. 519; and Anon. Gadgets for packaging, p. 524. R.A.S.

MACHINERY—CUTTERS

COLEMAN, AL. Your paper cutter. Graphic Arts Monthly 25, no. 12: 164, 166 (December, 1953); *cf.* B.I.P.C. 24: 283.

The author stresses the importance of the paper-cutter knife, stating that care should be taken in its selection, treatment, grinding (always wet), and honing. R.A.S.

MACHINERY—DRIVE, ELECTRIC

ANON. The BTH sectional paper-machine drive incorporating electronic control. World's Paper Trade Rev. 140, no. 20: 1495-6, 1498, 1503-5 (Nov. 12, 1953); *cf.* B.I.P.C. 24: 371.

Details of the sectional electronically controlled drive of the new fine-paper machine of the Guard Bridge Paper Co. are given. The complete drive equipment was supplied by The British Thomson-Houston Co. 2 tables, 5 illustrations, and 1 reference. E.S.

CAMPBELL, S. J. How Magamps are used on the new machine drive at West Tacoma. Paper Trade J. 137, no. 25: 30-2 (Dec. 18, 1953).

The application of magnetic amplifiers or Magamps to the control of paper-machine drives is explained by the example of a recent installation on a Pusey & Jones newsprint machine of the West Tacoma Newsprint Co., Steilacoom, Wash., which was designed for a speed range of 500 to 1500 f.p.m. The sectional drive is a so-called single-generator type; the most important use of Magamps in this case is the maintenance of the proper draw between machine sections. Magamps are also employed to control the running and starting generators. 5 figures. E.S.

MACHINERY—FELTS

RACE, E. The manufacture of felts for paper-making. Wool Rev. 27, no. 388: 29-30 (1953); J. Textile Inst. 44, no. 11: A704 (November, 1953). [Abstract only available]

The functions of the press felt in a paper machine are to carry the weak wet web of paper through the various processes of manufacture and to act as a filter cloth in allowing the removal of water from the paper. The requirements are met by a woven wool felt having a warp of strong hard-

twist yarn capable of bearing the tension load during running, and a weft of a resilient nature to provide adequate cushioning of the paper web. The weave structure and the cloth finish depend on the class of paper being made and involve a compromise between an open structure giving fast filtration and a close weave giving a smooth finish to the paper. E.S.

SMITH, JAMES E. More tons per day. Paper Mill News 76, no. 51: 22-3 (Dec. 19, 1953).

The author points out that emphasis on more tons per felt results in less efficient operation toward the end of the felt life. Case histories are given with statistics showing how the cost of a new felt replacing the worn one at an earlier date is justified by a reduction in operating costs. 3 tables and 1 figure. R.A.S.

STARKIE, J. P. Felts and felt manufacture. World's Paper Trade Rev. 140, no. 23: 1733-4, 1736, 1738, 1740, 1753-4 (Dec. 3, 1953).

The principal raw materials for papermaking felts are, in order of importance, wool, cotton, asbestos, and synthetic fibers. The structure and types of wool fiber are described. The manufacture of felts for paper-mill use covers wool selection, sorting and blending, scouring, willowing and carding, spinning, weaving, fulling, nap raising, stretching, and conditioning. The application of different weaves and textures to particular purposes in the mill is discussed. The factors in felt degradation are dealt with and the use of tanning is mentioned, as well as the best way of handling and storing felts. For efficiency, felts are made to meet individual machine requirements and conditions. E.S.

MACHINERY—HEAD BOX

NORSEEN, HAROLD A. Stock flow on the cylinder machine. Tappi 36, no. 12: 130-1A (December, 1953).

The author describes the mode of operation of a Pusey & Jones flow spreader as applied to the vat circle of a cylinder machine. E.S.

MACHINERY—PACKAGING MACHINERY

BAKER, E. D. S. Raising packaging efficiency in small firms. Brit. Packer 15, no. 11: 753-5 (November, 1953); *cf.* B.I.P.C. 23: 729.

Simple flexible machinery of the semiautomatic type, which can be used profitably by small firms, is described, notably a machine for carton filling. 4 diagrams. R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Packaging machinery. Modern Packaging Encyclopedia, 1954: 383-7, 390-1, 394, 397-8, 400-1, 406, 408, 415-19, 426-38, 441-2, 445-6, 451-2, 457-8, 461, 466-8, 470, 472, 477-8, 482-4, 486, 488 (1953).

Machinery and equipment used in the process of packaging are discussed separately by the following authors: Johnson, Roy. Bag filling, sealing and closing—7 illustrations, p. 384-5; Halbach, Otto. Wrapping and bundling equipment—8 illustrations, p. 386-7, 390-1; Southwick, Charles A., Jr. Heat-sealing methods—6 illustrations, p. 394, 397-8, 400-1; Edgar, H. Cecil. Collapsible-tube filling—5 illustrations, p. 406, 408; Siebert, E. A. Cartoning equipment—7 illustrations, p. 415-19; Claus, C. A. Filling equipment for dry products—9 illustrations, p. 426-31; Tiano, D. W. Liquid-filling equipment—

9 illustrations, p. 432-6; Stevens, G. Radcliffe. Fillers for viscous products—6 illustrations, p. 437-8; Konkle, J. E. Weighing equipment—4 illustrations, p. 441-2; Lakso, Gene. Counting machinery—7 illustrations, p. 445-6; Anon. Capping and sealing—9 illustrations, p. 451-2; Parsons, J. F., Jr. Labeling methods and equipment—2 illustrations, p. 457-8; Abendschein, E. J. Can-labeling equipment—1 illustration, p. 458, 461; Gottscho, Ira. Package marking—7 illustrations, p. 466-8, 470, 472; Anon. Auxiliary equipment—types and uses—19 figures, p. 477-8, 482-4, 486; and Anon. Package-handling methods, p. 488. R.A.S.

MACHINERY—PAPER MACHINE

ANON. New machine at Guard Bridge. World's Paper Trade Rev. 140, no. 20: 1487-90 (Nov. 12, 1953).

The modernization program of the Guard Bridge Paper Co., Ltd., Guard Bridge, Fife, Scotland included the installation of a new paper machine (constructed by James Bertram & Son) for the economical production of the highest quality papers. The machine is the first in Europe to be equipped with complete sectional electronic drive control (*cf.* B.I.P.C. 24: 369). 4 illustrations. E.S.

ANON. Peterson's start up Norway's largest post-war machine. World's Paper Trade Rev. 140, no. 11: 791-2, 794-5 (Sept. 10, 1953); *cf.* B.I.P.C. 24: 39.

Details of the new Fourdrinier paper machine built by Walmsleys (Bury) Ltd. and installed in the Moss mill of M. Peterson & Søn in Norway are given. 3 illustrations. E.S.

MACHINERY—PIPING

OLIVE, THEODORE R. Process piping. Chem. Eng. 60, no. 12: 187-210 (December, 1953).

A "process piping primer," including pipe-jointing methods and valves, is presented in three sections: metallic piping components; nonmetallic piping systems; and codes, standards, and design. 7 tables, 20 figures, and 10 references. E.S.

MACHINERY—PULPERS

ANON. Morden "Slush-maker" serves No. 14. Pulp & Paper 27, no. 13: 102 (December, 1953).

A specifically built Slush-maker unit with a 1500-pound tank has replaced the beater previously used on the No. 14 Yankee machine at the Camas, Wash. mill of Crown Zellerbach; it is used for stock preparation of bleached pulp in dry-lap, slush, and broke form for the manufacture of facial and toilet tissue. In special trials the unit repulped even high wet-strength broke successfully. 1 illustration. E.S.

MACHINERY—ROLLS

LEIGHTON, RALPH M. Rubber covered rolls on paper machines. Paper Trade J. 137, no. 23: 18-21, 23-4, 26, 28 (Dec. 4, 1953).

The author describes the manufacture of rubber-covered rolls (I) (including the metal cores and the building up and vulcanization of the rubber covers) and roll densities; directions for the inspection, grinding, maintenance, storage, and crowning of (I) in the paper mill are given. In conclu-

sion, the different applications of (I) in a paper machine are discussed. Useful hints for handling, storing, and grinding (I) and factors to be avoided are also summarized in three appendixes. 12 tables and 6 figures. E.S.

LOCKMAN, E. L. Care and maintenance of rubber-covered rolls. Tappi 36, no. 12: 152-3A (December, 1953).

Directions for the care and maintenance of rubber-covered rolls are given, including the grinding of such rolls and information required by the manufacturer for recovering them. E.S.

MACHINERY—SCREENS

RANHAGEN, G. The screening of paper-making pulp; modern Swedish viewpoints and practice. World's Paper Trade Rev. 140, Technical Convention no.: 24, 27-8, 30, 32, 34, 36 (November, 1953); Paper Trade J. 138, no. 1: 12-14, 16, 18-20, 22 (Jan. 1, 1954); *cf.* B.I.P.C. 24: 111-12.

Different types of screen equipment are grouped according to their construction and mode of operation and compared for their dirt-removing properties. Different kinds of dirt particles are considered with reference to the different types of screen equipment. In order to obtain the best results in cleanliness, capacity, as well as water and power consumption, optimum consistency should be maintained at every part of the screen surface, which is valid generally for all screens of the strainer type. Screen performance is illustrated graphically. It is stated that none of the screens on the market alone give a good result in all respects but that the different groups mentioned have their own very marked effect. A combination or double screening is to be preferred when the demand on cleanliness is high and is justified from statistical considerations. The modern high-frequency vibratory screens, centrifugal screens, and vortex cleaners give good possibilities of combination. With double screening with high-frequency vibratory screens with slotted plates in combination with centrifugal screens the best results have been obtained when the former were placed first in the series. The high-frequency vibratory screen of the rotary type is stated to be excellent for final screening and as a strainer ahead of the paper machine. The system used is of greater importance than the individual screening unit. The system should be designed to permit each integrated unit to work at optimum conditions. The design of the secondary and tertiary part of the screening room is of vital importance for cleanliness and economy. The accepted stock from the secondary and tertiary screens should be recirculated to the charge for primary screening. A couple of flowsheets in general and for straw pulp in particular are discussed. The two articles are a condensed and a complete translation of the Swedish original. 6 figures and 1 reference in the first and 28 figures in the second articles. E.S.

MACHINERY—WEB TRANSFER

KELLEY, CLAUD. Application of vacuum transfer to high-speed newsprint machines. Pulp Paper Mag. Can. 54, no. 12: 118-20 (November, 1953).

The first vacuum transfer built by Beloit Iron Works for one of the newsprint machines of the Crown Zellerbach Corp. at Port Angeles, Wash. and its construction, operation, and advantages (reduction of sulfite in the furnish from 18 to 9%, reduction in machine breaks by 75%, and higher operating speeds) are described. 4 illustrations. E.S.

MARKET RESEARCH

BOYCE, CHARLES W. The American paper market. Paper Ind. 35, no. 9: 992-5 (December, 1953).

The American paper market for the past decade has been expanding, and required volumes of domestic production and of imports have grown. Even though this increase is expected to continue, or at least remain at the present height, attention should be directed to the growing production of substitutes for paper. Recommendations to meet this competition are a greater measure of interindustry competition, a consolidation of gains in existing fields, and an exploration of the possibilities of service in new fields. Capacity production is realizable provided more effort is put into the development of the market and the merchandising of the product. 3 diagrams. R.A.S.

CHIDESTER, G. H. New and improved paper products. Paper Ind. 35, no. 9: 1002-5 (December, 1953).

New and improved products, credited with the continued growth and vigor of the pulp and paper industry, are discussed. Current trends in new products and new uses for paper products are being found principally in the fields of packaging (paper milk container, rust-resistant paper, expanded paper honeycomb, and water- and vapor-resistant papers), containers (fiberboard boxes, paper-overlaid veneer, and vacuum-cooling process), printing papers (using hardwoods), wet-strength papers, tissue, toweling, creped wadding, building materials (paper honeycomb cores and resin-treated overlay papers for veneer, etc.), filters, and miscellaneous papers. 4 references. R.A.S.

EVEREST, D. C. Merchandising trends in the pulp and paper industry. Paper Ind. 35, no. 9: 996-8 (December, 1953).

The author reviews the trend in the consumption of pulp, paper, and paperboard within the United States in the past 20 years; the trend, with a few recesses, has climbed from 9.7 million tons in 1932 to 31.9 in 1951. Factors which are expected to contribute to increased consumption in 1954 are increased budgets for direct sales appeal and direct-mail advertising and demand for printing papers in the Congressional election. There is also a trend in the direction of complete integration and longer-term contracts. 1 diagram. R.A.S.

NEUBRECH, W. LEROY, and PEDERSON, WALLACE H. The distribution of pulp, paper, board and products in the nation's industrial and business economy. Ind. Rept. Pulp and Paper 9, no. 4: 23-37 (December, 1953); Paper Ind. 35, no. 9: 998-1001, 1011 (December, 1953); Fibre Containers 39, no. 1: 98-104, 106, 108 (January, 1954).

An extensive study of interindustry relations is presented, giving a detailed cross-sectional picture of the pulp and paper industry economy. Input-output data are tabulated and their applications in the fields of marketing research, distributions (direct wood pulp, direct paper and board, and converted products), and production are discussed. Statistics show that the primary paper and board industry uses 82.5% of the total pulp supply; paper and board converting industries use 46% of the total paper and board output; and households use 10.5%, wholesale trades 8%, retail trades 11%, and printing and publishing 5.2% of the converted products. Factors determined as affecting the final demand, (i.e., the sale of commodities to the ultimate consumer) and their relation to pulp, paper, and board products are analyzed as a basis for projecting future markets. The articles are identical; however, the reference to the detailed statistical table serving as the basis for the discussion is appended only to the first and third references. 1 table. R.A.S.

METERS AND RECORDERS

DOBBIE-MCINNES LTD., *Glasgow.* The Dobbie-McInnes peak pressure indicator. World's Paper Trade Rev. 140, no. 10: 730, 732 (Sept. 3, 1953).

The operation and applications of an instrument (graduated in either English or metric units) for indicating maximum pressures of production engines where fluctuating pressures occur are described. 2 figures. E.S.

MICROSCOPY

ROCHOW, T. G. Resinography, the microscopy of resins and their plastics. Symposium on light microscopy. ASTM special publication no. 143: 81-93 (1952, publ. 1953).

Examples of the application of light microscopy to the study of natural and synthetic resins are given; several of these involve paper- or board-making problems (presence and differentiation of wet-strength resins, detection of crystallization of rosin sizes, migration of phenolic resin in a paper laminate, etc.). 1 figure and 21 photomicrographs. E.S.

MILL MANAGEMENT

ELLIOTT, NORMAN J. The small business man looks for help. Boxboard Containers 71, no. 732: 22-3, 76, 78-80 (December, 1953).

A case study of a situation occurring in a boxboard plant and the various individuals concerned is presented. Analysis of the production of two quad stayers revealed only 53% efficiency; the hiring of one more worker reduced the cost by $2.24 per 1000 pieces. Personalities of management personnel are described. 4 tables. R.A.S.

PULP & PAPER and MCSWEENEY, EDWARD. Responsibility for selecting and training executives; a management program. Pulp & Paper 27, no. 13: 80 (December, 1953).

The problem of selection and training of men for top management, which is facing the pulp and paper industry today, is discussed in the form of questions addressed to the latter author; he advocates the setting up by the company of a program to develop management abilities of younger men and the recognition of managerial training courses presently available. Ten major objectives of management are listed. R.A.S.

WALTERS, STANLEY E. [Moderator] More in common than in conflict. Paper Trade J. 137, no. 24: 49-52, 55-6, 58-60 (Dec. 11, 1953).

A case study in human relations in industry, exemplifying how good labor-management relations can effectively operate for the benefit of all, is presented by representatives of both labor and management of the Downingtown Paper Co. Authors and titles of the individual presentations are: Walters, Stanley E. Introduction, p. 49; Gray, John W., Jr. Company's attitude toward the union, p. 49-50; Mattson, Huston. Union's attitude toward management, p. 50-1; Meacham, George A., Jr. The Athletic Association and its activities, p. 51; Brookover, Thomas E. We handle grievances, p. 52; Loughlin, Charles F. Cooperative clinics, p. 52, 55; Ash, William W. E., Jr. Training in-plant and outside courses, p. 55; Mattson, Huston. The union on job

evaluation, p. 55-6; Gray, John W., Jr. The company on job evaluation, p. 56; Brookover, Thomas E. Medical program—blood program, p. 56; Meacham, George A., Jr. Safety activities, p. 56, 58; Ash, William W. E., Jr. The diary and the suggestion system, p. 58; Gray, John W., Jr. Union leaders attending management conferences, p. 58; Meacham, George A., Jr. Joint Taft-Hartley statement, p. 58-9; Loughlin, Charles F. Publications sent out jointly, and ECA visitors, p. 59; Mattson, Huston. Union community activities, p. 59; Ash, William W. E., Jr. Evidence of thoughtfulness, p. 59-60; Walters, Stanley E. Further remarks, p. 60; and McIlvain, F. Huston. Additional remarks from the floor, p. 60. R.A.S.

PACKAGING

AMERICAN WHEELABRATOR & EQUIPMENT CORPORATION, *Mishawaka, Ind.* Fiberboard containers replace bags in new abrasive packaging procedure. Packaging Parade 21, no. 251: 96 (December, 1953).

The company's new method of packaging and shipping its Wheelabrator steel shot (a blast cleaning and peening abrasive) consists of 50-pound fiberboard containers sealed with waterproof tape and shipped on disposable pallets each holding one ton of shot. 3 illustrations. R.A.S.

ANON. Canada, too, makes paper progress. Paper & Twine J. 27, no. 9: 35-9 (November, 1953).

Recent packaging developments of Canadian mills are described, including the Woods Manufacturing Co.'s Centurion Elastic Multi-Wall bag, an insulated paper bag for ice, the Bathurst Power & Paper Ltd. Retripper (a special corrugated box), aluminum-lined corrugated board, and the corrugated fiberboard container for vacuum-cooled lettuce being developed by Hinde & Dauch Paper Co. R.A.S.

ASHWELL, G. M. Developing the use of paper and paper board packages. Paper Box Bag Maker: 180-2 (October, 1953); World's Paper Trade Rev. 140, no. 15: 1108, 1110 (Oct. 8, 1953).

Both articles contain references to an address given by the author in which he comments on the wide use of paper in packaging. The development of this use in Britain is viewed as far behind that in Canada, the United States, and the Scandinavian countries. The first article describes the corrugated containers made by Robert Gair Co. designed to package boat kits, tables, and a new type of automobile gasket. The second reference emphasizes the part played by research and machine handling aids in effecting progress of packaging in the United States. The articles are not identical. 4 illustrations in the first reference. R.A.S.

FROMM, HILDA F. Legal considerations. Modern Packaging Encyclopedia, 1954: 24-6 (1953).

The author discusses briefly the basic legal necessities of packaging and labeling. R.A.S.

GERHARDT, FISK, and SCHOMER, H. A. Film liners for boxes of pears and apples. Paper, Film and Foil Converter 27, no. 12: 23-4, 51 (December, 1953).

Storage life of pears was increased from 30 to 41 days by packaging in sealed film bags at 31°F. Films tested and found satisfactory for these

liners are Pliofilms 75 FF, 80 FM1, and 100 FM1, cellophane 300 LSAT, and polyethylene 100 and 150. Apples were also found to benefit from packaging in film liners, chiefly through reduction of moisture loss and shrivelling. Shelf life of pears was increased a few days by this packaging; caution should be taken in the selection of fruit because high humidity conditions within the film bags are conducive to the development of decay. 2 tables.
R.A.S.

HEISS, R. Packaging no stepchild. Neue Verpackung 6, no. 9: 415-25 (September, 1953). [In German]

The author's impressions of the 22nd packaging exhibition in Chicago on April 20-23, 1953 are recorded in a rather extensive article, covering packaging materials, containers, and machinery. 10 illustration and 2 footnotes.
E.S.

KOTTE, HANS. Packaging in Sweden; impressions from a study trip. Verpackungs Rundschau no. 9: 377-9; no. 10: 417-21; no. 11: 465-7 (September-November, 1953); *cf.* B.I.P.C. 24: 294. [In German]

The author attempts to give a cross section of the present status of the packaging industry in Sweden, with particular reference to food packaging in paper, board, and plastic materials. The packaging laboratories of Akerlund och Rausing in Lund, the development of self service, packaging of frozen foods, and Swedish packaging machinery (including the filling and closing of multiwall bags and the Tetra Pak milk and cream container and the required machinery for setting up and filling (*cf.* B.I.P.C. 22: 266-7) are described in some detail. 22 figures.
E.S.

MODERN PACKAGING ENCYCLOPEDIA. Decorative packaging. Modern Packaging Encyclopedia, 1954: 583-6, 588, 590, 592, 594, 596, 599 (1953).

This section of the encyclopedia consists of the following articles: Anon. The materials of decorative packaging—9 illustrations, p. 584-6, 588, 590; Anon. Achievements in decorative packaging—10 illustrations, p. 592, 594, 596; and Neubauer, Robert G. Design adaptation, p. 599.
R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Flexible and unit containers. Modern Packaging Encyclopedia, 1954: 231-6, 238, 242-4, 246, 248, 250-3 (1953).

Articles with the following authors and titles are included in the section on flexible and unit containers: Oshan, Stanley H. Bags—12 illustrations, p. 232-4; Cowan, John M. Envelopes and packets—9 illustrations and 3 footnotes, p. 235-6, 238; Schneider, William S. Potentials of strip packaging—6 illustrations, p. 242-4, 246, 248; Anon. Printing on plastics, p. 250; and Bronander, W. B., Jr. Wrap packages—10 figures, p. 251-3.
R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Merchandising considerations. Modern Packaging Encyclopedia, 1954: 20-3 (1953).

The following check points for merchandising are listed and discussed: the product, the market, buying habits, size considerations, competition, and package appearance—for identity, information, and inviting attention. 6 illustrations and 2 references.
R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Paperboard containers. Modern Packaging Encyclopedia, 1954: 173-6, 179, 184-6, 189, 196-7, 204, 207-8, 210, 218 (1953).

Various types of paperboard containers are described by the following authors: Newell, John C., Jr. Folding cartons—12 figures, p. 174-6, 179; Levkoff, Henry S., and Austin, Marshall M. Self-locking trays and cartons—2 illustrations, p. 179; Fitch, Milton L. The set-up or rigid box—14 illustrations, p. 184-6, 189; Bigger, R. P. Fibre and composite containers—5 illustrations, p. 196-7; Anon. Liquid-holding paper containers—6 illustrations, p. 204, 207-8, 210; and Anon. Molded pulp—2 illustrations and 2 references, p. 218. R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Producing the package. Modern Packaging Encyclopedia, 1954: 27-38, 40-6, 48-50 (1953).

Factors concerned in producing a package are treated in the following articles, listed by authors and titles: Iacono, A. M., and Schettel, A. R. Preproduction considerations—5 figures, p. 28-32; Winckelmann, Gustav. Production considerations—5 illustrations and 1 reference, p. 33-7; Packaging Institute. *Production Line Committee.* Check list for selecting equipment, p. 38; Anon. Organizing for packaging—1 illustration, p. 40-1; New Haven Pulp & Board Co., *New York.* Package development flow chart, p. 42; Lewis, Charles A. The statistics of packaging—2 tables and 1 figure, p. 43-5; Anon. Special services and facilities, p. 46, 48-50; and Geisler, Margaret S. Government packaging pointers, p. 50. R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Protective packaging and shipment. Modern Packaging Encyclopedia, 1954: 631-6, 638, 642-4, 646-50, 652 (1953).

This section of the encyclopedia contains articles by the following authors: Beardsell, Allyn C. Protection—materials and methods—1 table, 9 figures, and 4 footnotes, p. 632-6, 638; Royce, Clinton K. Trends in military packaging—4 illustrations, p. 642-4; Saylor, John S., and O'Reilly, R. A., Jr. Industrial packaging—3 illustrations, p. 646-7; Deitsch, Philip O. Industrial bags and covers—4 illustrations, p. 648-9; Anon. Shipping regulations, p. 650; and Geisler, Margaret S. Sources of government packaging information, p. 652. R.A.S.

RIETHMÜLLER, WALTER. Self-service merchandising of meat and sausages. Verpackungs Rundschau no. 9: 388-90 (September, 1953). [In German]

Data from U. S. Dept. of Commerce sources for the correct packaging and storing (temperature and R.H.) of prepackaged meat, cheese, vegetables, and fruit are presented. 2 tables, 1 illustration, and 3 references. E.S.

YEZEK, MILTON. Selection of packaging materials. Modern Packaging Encyclopedia, 1954: 14-19 (1953).

A check list of factors which must be considered in selecting packaging materials is discussed; the various factors are ascribed to technical (product characteristics and protection), sales, manufacturing, purchasing, and accounting departments, and suppliers. 2 tables and 2 figures. R.A.S.

PAPER—COATED

STEFFENS, O. R. Size press coating. Paper Mill News 76, no. 49: 120 (Dec. 5, 1953).

Results of tests in coating on the size press performed at Penick & Ford, Ltd., Cedar Rapids, Iowa with the use of Penford Gum (hydroxyethyl ether derivative of cornstarch) or various ratios of Penford Gum and Dow 512-K Latex as the adhesive show more uniform coatings and better printing surfaces. The formula used in coating offset paper on the size press is given. R.A.S.

PAPER—COATED (HOT-MELT)

SWEC, L. F. Resin-coated papers. Modern Packaging Encyclopedia, 1954: 65-6, 69 (1953).

The author reviews briefly the types of resin-coated papers, including polyethylene (military classifications JAN-P-117, B-121, and P-125), vinyl, saran, and other thermoplastics. 1 table and 2 illustrations. R.A.S.

PAPER—CONVERSION

DAY, FREDERICK T. Paper and board slitting. Brit. Packer 15, no. 11: 745-6, 771 (November, 1953).

Paper-converting functions are discussed, including types of material converted, slitting, rotary cutting, square-cut paper, crimping, perforating, and cutting and creasing presses. 2 illustrations. R.A.S.

PAPER—FILLERS

DIEM, MELVIN H., and LEIGHTON, L. FRANKLIN, JR. Use of protein condensates to promote retention of fillers. Tappi 36, no. 12: 144-6A (December, 1953).

The author discusses the beneficial results in the retention of clay, titanium dioxide, and calcium carbonate obtained with Keraton, a protein-fatty acid condensate in liquid form, readily dispersible in water. Small quantities are effective and solutions are readily made up without the use of special equipment or heat. The pH of the white-water system should be in the range of 4.5-5; small quantities of sodium aluminate aid in retention. Dispersing agents interfere with the beneficial effects of these protein derivatives. E.S.

PAPER—MERCHANDISING

THE NATIONAL PAPER TRADE ASSOCIATION, INC. NPTA urges sale of roll coarse papers by linear measure. Paper & Twine J. 27, no. 9: 24 (November, 1953); Paper Trade J. 137, no. 19: 12 (Nov. 6, 1953).

The association recently adopted a resolution that it would be in the interests of both the public and paper merchants to have roll coarse papers sold by area and so marked by the manufacturers. Five ways in which the changeover would be of benefit are listed. R.A.S.

OLSON, GUIN C. You can't take anything for granted. Paper & Twine J. 27, no. 10: 7, 16, 18, 20 (December, 1953); *cf.* B.I.P.C. 24: 34-5.

Phases of warehouse operations and the wide variations in performance patterns disclosed in the study by The National Paper Trade Association

published in the booklet "The cost of storing, handling and delivering paper" are discussed. Data are given on warehouse turnover, orders, wages, and rental; and charts are presented showing pounds of paper per warehouse employee, number of orders per employee, wages in relation to efficiency, and sales per sq. ft. of warehouse space. 5 tables. R.A.S.

PETREQUIN, E. J. Is all this necessary? Am. Paper Merchant 50, no. 12: 26, 55 (December, 1953).

Unnecessary costs and services which hinder the paper wholesaler from operating at maximum efficiency are discussed. R.A.S.

SAALFELD, CLEM. Produce prepackaging proves profitable for Cincinnati paper firm. Am. Paper Merchant 50, no. 12: 22-4 (December, 1953).

The development of the prepackaging of fresh fruits and vegetables is traced; customer preference is credited with advancing the field so that now almost every variety is included. Ways in which the paper distributor can serve self-service markets and advantages of prepackaged produce to the retailer are listed. 3 illustrations. R.A.S.

SOMERS, FRANK. Are you afraid to look your costs in the eye? Paper Sales 13, no. 12: 16-17, 55-6 (December, 1953).

The author points out places in business which are frequently causes of loss and should be recognized and investigated, including slow-moving items, individual salesmen, internal operations (e.g., warehouse), profitless accounts, and services to unprofitable geographical areas. R.A.S.

STEPHENS, H. A. The case for the exclusive franchise. Am. Paper Merchant 50, no. 11: 22-3, 67-9; no. 12: 18-20 (November, December, 1953).

In analyzing mill-merchant relations, the author describes methods used by mills for selling products—direct, direct and through merchants, through merchants with a free distribution policy and with limited distribution, and through franchised distributors. He then spotlights his discussion to arguments on the final method; objections from the merchants' standpoint, objections from the mill, the function of a distributor, six case histories of franchise distributions, points to be included in an agreement, and major advantages to both mill and merchant are listed. R.A.S.

WEEDY, KENNETH C. Current reflections. The wood for the trees. Tech. Bull. Tech. Sect., Brit. Paper and Board Makers' Assoc. 30, no. 4: 92-4, 96 (August, 1953); *cf.* B.I.P.C. 23: 867.

The author discusses problems in the future of the paper trade and paper selling and emphasizes past mistakes and present shortcomings which must be overcome if the small merchant is to justify his existence in the paper trade. E.S.

PAPER—SHEET FORMATION

LOWE, ALLEN A. Some answers to problems in handling stock flow to forming elements. Paper Trade J. 137, no. 21: 14-18 (Nov. 20, 1953).

The author discusses problems in the delivery of stock to the forming elements (vat or Fourdrinier wire) and some of the solutions which The

Sandy Hill Iron and Brass Works provides, with particular emphasis on the fact that all parts of the cycle (from the initial point of mixture to the point of delivery) have a bearing on the final results and that no improvement or new installation in one point of the cycle can be made without giving consideration to its effects on the combination of the other units in the cycle. This cycle includes: the mixture of the thick stock with the conveying liquid, the accumulation and handling of the conveying liquid, the maintenance of the mixture, the avoidance of air entrapment, and the delivery to the forming surface. The individual factors are taken up in detail, supplemented by practical examples. The paper mill operator and the designer of new equipment should check their system point for point for possible improvements and consider all the factors which influence entrapment and accumulation of air, the maintenance of the liquid-fiber mixture, the dispersion of fibers and the distribution of the fiber-bearing liquid at the point of discharge under the slice, and the selection of the most suitable slice for the conditions on hand. Air entrapped and forced into stock at any point of the machine circuit may reappear at the slice to the detriment of formation. In addition, floc formation subsequent to mixing of the thick stock with white water may persist right down to the slice. 9 figures. E.S.

TUTT, RICHARD, JR. Sveen glue. Tappi 36, no. 12: 143-4A (December, 1953).

The author describes the advantages resulting from the application of glue by the Sveen method at the wet end of the paper machine, notably better filler and fines retention and improved sheet formation with reduced two-sidedness. The effects of Sveen glue carry through to the savealls and aid in the efficiency of their operation. Since most paper machines have individual characteristics, care in the selection of the proper grade of glue and method of preparation and application must be exercised; the use of soaps, alum, chrome alum, or alkaline salts may be indicated under certain conditions. Excessive dosages of glue beyond those actually needed are wasteful and may aggravate foaming on the machine; they may even reverse the beneficial action and cause dispersion rather than flocculation. Current dosages today range from approximately 1 to 2.2 pounds/ton of paper. E.S.

PAPER AND PULP INDUSTRY

AMERICAN PAPER AND PULP ASSOCIATION. How dependent on our industry are the communities of the United States. Paper Trade J. 137, no. 22: 21-2 (Nov. 27, 1953).

The findings of an association report on community relations are summarized; the report includes statistics from 1950 on the number of establishments of the pulp and paper industry, communities, communities over 50% dependent on the industry, and number of employees, and employees and dependents. The survey found that 159 communities containing 184 establishments are more than 50% dependent on the paper and pulp industry. 2 tables and 1 map. R.A.S.

EGAN, FRANK W. Major trend in primary mills is to converting but independent small plants need have no fear. Pulp & Paper 27, no. 13: 88, 90 (December, 1953).

The increasing amount of conversion of paper and paperboard by the primary pulp, paper, and board mills is viewed as a contribution to the welfare of the independent converter rather than cutting their business because of the increased demand for converted products; there is a large field for both. 4 illustrations. R.A.S.

SAGE, CHARLES H. How big is the industry in Wisconsin? Paper Trade J. 137, no. 26: 23-4 (Dec. 25, 1953).

Wisconsin produces over 10% of all the paper made in the United States and about 5% of the total world production. Because of its importance in the state more emphasis should be placed on the production of pulpwood; use of a wider variety of species and increased productivity of the state's 16 million acres of forest land are recommended. R.A.S.

STEVENSON, LOUIS T. An over-all economic survey of the pulp and paper industry. Paper Ind. 35, no. 9: 1009-11 (December, 1953).

The over-all production of paper and board in 1953 is estimated at 26.6 million tons; recent data are compared with those of 1951, in which the industry experienced its greatest production. The characteristics of the demand of paper and industry problems, principally recurrent overbuying and building of inventories by customers, are discussed. No decline is anticipated for 1954; if general business activity should drop 10% in the Federal Reserve Board index, total paper and board production would still be 26 million tons. 1 table. R.A.S.

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION. World trends in wood pulp; Unesco survey of production and consumption. World's Paper Trade Rev. 140, no. 14: 1003-4, 1006, 1008, 1010 (Oct. 1, 1953).

The sections "Distribution of production, consumption, and trade" and "Expanding use of wood pulp" of the recent publication by Unesco and FAO "Paper for printing—today and tomorrow," pages 21-8 and two of the statistical tables are reprinted. 2 tables. E.S.

THE WORLD'S PAPER TRADE REVIEW. Paper production chart. World's Paper Trade Rev. 140, no. 18: 1347 (Oct. 29, 1953).

The 1952-3 recession in the United Kingdom and United States paper industries is pictured graphically; the production in the two countries as a percentage of the prewar level is graphed from January, 1952 to June, 1953. 1 chart. R.A.S.

PAPER AND PULP INDUSTRY—EDUCATION

ANON. Paper making outfits for British Columbia schools. Paper Trade J. 137, no. 21: 12 (Nov. 20, 1953); Can. Pulp Paper Ind. 6, no. 12: 44, 46 (December, 1953); Pulp Paper Mag. Can. 54, no. 13: 95 (December, 1953).

A papermaking kit, with which students or teachers will be able to make an actual sheet of paper, is being distributed to every high school in British Columbia by the pulp and paper industry of the province. The kit includes a film strip tracing each manufacturing step, photographs demonstrating the way to use the kit, and some samples of raw materials and equipment. 1 illustration. R.A.S.

PAPER AND PULP MILLS

ANON. West Tacoma expansion completed. Paper Mill News 76, no. 51: 14-20 (Dec. 19, 1953).

The $5,000,000 expansion program of the West Tacoma Newsprint Co., near Tacoma, Wash. is described; production was increased from 25,000 to 60,000 tons annually. New major installations include a 148-inch Pusey &

Jones Fourdrinier paper machine with hood and exhaust system, a new grinder room with three Roberts grinders, a Hydrapulper, a new boiler house and boiler, power substations, a water pumphouse and clarifier tank, and auxiliary equipment. 26 illustrations of the equipment. R.A.S.

ANON. Westminster completes $2,500,000 expansion—adds new Beloit machine. Paper Mill News 76, no. 46: 162-3 (Nov. 14, 1953); *cf.* B.I.P.C. 24: 121.

The description of the expansion of the Westminster Paper Co. Ltd. is similar to that in the previous reference. R.A.S.

DAOUST, GIL. Powell River's development program. Pulp Paper Mag. Can. 54, no. 12: 102-6 (November, 1953); *cf.* B.I.P.C. 23: 819.

Essentially the same information as in the previous reference on additions to the Powell River Co. is presented and somewhat expanded. 8 illustrations. R.A.S.

PULP & PAPER. M & O "guinea pigs" new equipment—likes it—starts up one of largest modern grinder rooms. Pulp & Paper 27, no. 13: 70-2, 74, 76 (December, 1953); *cf.* B.I.P.C. 23: 113.

The eight-year-long program of modernizing the three mills of Minnesota & Ontario Paper Co. (International Falls, Minn. and Fort Frances and Kenora, Ont.) is discussed. Improvements at International Falls include a company-designed, Beloit-built coating machine with a Kohler flying plaster unwind stand, the rebuilding of the No. 2, and a new headbox and inlet for the No. 3 Fourdrinier machine. At Fort Frances a new grinder room was constructed with steel inside wall, corrugated metal outside wall, and Fiberglas insulation between. The two newsprint machines of the Kenora mill were speeded up through the installation of large motors; production on both machines now totals 365 tons a day. 11 figures. R.A.S.

TURNER, JOHN S. Pioneering persists at Portneuf. Pulp Paper Mag. Can. 54, no. 12: 100-1, 106 (November, 1953).

The construction of a four-story addition to the Portneuf mill of J. Ford and Co. Ltd. and new equipment installed are described. Included in the installation were a Lukenweld Yankee cylinder machine and a Hudson-Sharpe slitter-rewinder. 4 illustrations. R.A.S.

PAPER MACHINE OPERATION

PHILLIPS, NOEL R. Papermaking (Fourdrinier) Committee. Tappi 36, no. 12: 125-7A (December, 1953).

This report on recent committee activities includes a summary of the discussions held during two sessions, one on the determination of paper-machine efficiency and the other on the maintenance of basis weight. E.S.

PAPER SPECIALTIES

THE AMERICAN HARDWARE CORP., *New Britain, Conn.* In-plant labeling. Modern Packaging 27, no. 4: 132-4 (December, 1953).

A total of about 540 different labels for lock hardware has been reduced by the company to four labels preprinted with basic information; the infinite variations of catalog number, end use, type of metal, finish, etc., are quickly imprinted in the plant as needed simply by a change of slugs. The pressure-

sensitive labels are applied in the plant by an electric dispensing machine. 6 illustrations. R.A.S.

ANON. Hosho, Japan's unique ceremonial paper. Paper & Paper Products 95, no. 11: 25 (Dec. 5, 1953).

Hosho, a Japanese paper made from the fiber of the kozo or paper mulberry, to which are added finely ground rice powder and a mucilage made from the bark of trees (norinoki), is described. The white, thick, and soft paper has been used since the 16th century by officials in writing important orders and by commoners for ceremonial use. R.A.S.

BROOCKMANN, KARL. Laminated aluminum foils. Verpackungs Rundschau no. 10: 433-5 (October, 1953). [In German]

Reference is made to the improvement in strength of aluminum foils and the decrease in air, light, odor, and water-vapor permeability of paper, board, or plastic bases which result from the correct laminations of the two materials; lacquering will further enhance these properties. The author describes suitable adhesives for different base materials and packaging purposes in some detail, including a tabular presentation. All papers which are free from chlorine and sulfate and possess a pH of 5.2-7 are, as a rule, suitable for laminations. Data on the permeability of flat and folded sections of a package and the possible improvement through correct heat sealing at the optimum temperature (which, naturally, varies with the type of adhesive) are given. 4 tables and 12 footnotes. E.S.

COWEN, TRACY. Liners and seals for closures. Modern Packaging Encyclopedia, 1954: 370-2, 376 (1953).

This discussion of materials used for lining and sealing closures of rigid glass, metal, and plastic containers includes numerous papers and laminations, notably laminated Pliofilm, cellophane, and saran, varnish- and resin-coated paper, synthetic-coated paper facings, dark-brown acid-resisting paper, and calender- and wax-coated papers. 3 illustrations. R.A.S.

DAY, FREDERICK T. Paper conversion and usage. No. 52. Tickets, roll tickets, cards, labels, badges, etc. World's Paper Trade Rev. 140, no. 9: 638-40 (Aug. 27, 1953); *cf.* B.I.P.C. 24: 124.

The production of tickets in the flat, continuous roll, or booklet form is described; other varieties of tickets, such as seals, labels, badges, tallies, rosettes, etc. are enumerated. 2 illustrations. R.A.S.

DAY, FREDERICK T. Paper conversion and usage. No. 53. Postage stamps and poster stamps. World's Paper Trade Rev. 140, no. 13: 950-2 (Sept. 24, 1953).

Selection of design, paper and printing, use and application, and history of postage and poster stamps are discussed. 2 illustrations. R.A.S.

DAY, FREDERICK T. Paper conversion and usage. No. 54. Manufacture and application of abrasive papers. World's Paper Trade Rev. 140, no. 17: 1260-1 (Oct. 22, 1953).

The author discusses abrasives and types of body paper used and varieties (including glass-paper and allied grades of coarse coated papers) in the production of abrasive papers. 1 illustration. R.A.S.

DAY, FREDERICK T. Paper conversion and usage. No. 55. Seasonal conversions—printed seals, drip mats, cocktail mats, etc.

World's Paper Trade Rev. 140, no. 21: 1574-5 (Nov. 19, 1953).

Basic papers employed, current uses, and methods of production for the items which are collectively considered as seasonal paper conversions are discussed. 2 illustrations. R.A.S.

HAWTHORN-MELLODY FARMS DAIRY, *Chicago.* Milk-pitcher carton. Modern Packaging 27, no. 4: 98-9, 209 (December, 1953).

The company has recently adopted a new type of disposable waxed-paper milk container—a carton with a pitcher-style pouring spout, manufactured by the Pure-Pak Div. of Ex-Cell-O Corp. The only modification necessary in the present packaging equipment is off-centered stapling. 4 illustrations. R.A.S.

HOLBROOK, HERBERT T. Laminations. Modern Packaging Encyclopedia, 1954: 128, 130, 132, 135 (1953).

Materials, equipment, processes, and recent developments in the various combinations of laminates are discussed. 1 table and 2 figures. R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Basic papers. Modern Packaging Encyclopedia, 1954: 52-60 (1953).

The various types of basic papers are discussed separately by the following authors: Anon. Basic papers, p. 52; Franklin, S. W. Kraft, p. 52-3; Borden, George C., Jr., and Wolper, Paul K. Glassine paper, p. 53-5; Becker, John E. Greaseproof paper, p. 55-6; Worth, Everett S. Vegetable parchment, p. 56-7; Rogers, Carl E. Waxed paper, p. 57; and Larson, John M. Tissue paper, p. 57-60. 1 table and 8 illustrations in the section. R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Closures for rigid containers. Modern Packaging Encyclopedia, 1954: 362-7, 369 (1953).

Included in this article on the various types of closures for glass, metal, and plastic containers is a section on paper closures describing the crimp-edge cap and the flat-disk tab opener. 40 illustrations. R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Fancy papers. Modern Packaging Encyclopedia, 1954: 76, 79-80 (1953).

Decorative papers, their manufacture, finishing treatment and processes, and design are described; types include tissues, metallics, flocks, and simulations. 3 illustrations. R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Labels and seals. Modern Packaging Encyclopedia, 1954: 551-7, 568, 572, 574, 577-8, 581 (1953).

Various general considerations given to labels and seals are: Anon. Labels—types and uses—12 illustrations, p. 552-6; Ketcham, Howard. Color, p. 557; Schneider, Peter A. Seals and tags—3 illustrations, p. 568, 572; and Gisondi, James. Using package surface effectively—9 illustrations, p. 574, 577-8, 581. R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Properties of packaging papers. Modern Packaging Encyclopedia, 1954: between pages 80 and 81 (1953).

A chart is presented showing general and chemical properties, physical test data, and permanence characteristics for typical varieties of papers, coatings, and laminations. 1 folded chart. R.A.S.

NEUBRONNER, CARL. Adhesive tape in rolls; purchasing, storing, and conversion. Verpackungs Rundschau no. 10: 444-8 (October, 1953). [In German]

Simple methods for testing weight (basis weight of paper and weight of adhesive coating), bursting strength of paper, and tack of adhesive on receipt of a shipment of adhesive tape are given. The present tendency for substituting light basis weights for heavier ones is not in the interest of safe packaging and is strongly criticized. Storage in the original wrappers in dry, well-ventilated rooms is recommended; sudden temperature changes, particularly from cold to hot, are exceedingly harmful. Certain strong odors (such as from carbolic acid, sulfur, or formaldehyde) exert a hardening effect on the adhesive film and render the tape useless, a fact which is not generally known. In conclusion, useful hints for the application of the tape (correct moistening, straight travel of tape over moistening roll, absence of dust in the packaging room, etc.) are given. 2 tables and 6 figures. E.S.

PAPER SALES. VCI envelopes. Paper Sales 13, no. 12: 18-19, 55 (December, 1953); *cf.* B.I.P.C. 24: 216.

The sales possibilities of envelopes treated with volatile corrosion inhibitors, whose application and properties are described in the previous reference, are discussed. 3 illustrations. R.A.S.

SMITH, DONALD P., and ROLLIN, J. NORBERT. Sorbic acid as a mold inhibitor. Modern Packaging 27, no. 4: 139-41, 184 (December, 1953).

Laboratory tests in the search for a legally approved nontoxic fungistatic additive for food-wrapper coatings (cheese in particular) found sorbic acid to meet these requirements. The many materials tested were spread evenly over the surface of a 40-sq.-in. wrapper of thermoplastic-coated cellophane; the thermoplastic coating served as a carrier for the material tested. Results of the tests are presented; they show the degree of inhibition of mold with varying concentrations and also the degree to which the presence of the sorbic acid can be perceived. Conditions necessary for the efficient packaging with sorbic-acid treated wrappers are listed. 2 tables and 6 figures. R.A.S.

PARTICLE SIZE

LOVELAND, R. P. Methods of particle-size analysis. Symposium on light microscopy. ASTM special publication no. 143: 94-122; discussion: 123-6 (1952, publ. 1953).

There are two general microscopic methods for the determination of particle size: (*a*) the count method, with which the average particle size can be obtained, and (*b*) the direct measurement and classification of each particle whereby the frequency of the distribution of the various sizes can be obtained, i.e., the size-frequency curve. The techniques involved in these methods are described in considerable detail. 1 table, 19 figures, and 41 references. E.S.

PHYSICAL TESTING—FASTNESS TO LIGHT

BABEY, MATTHEW J. Report on comparative sunlight and Fade-Ometer tests of selected dyed manufactured fiber samples. Am. Dyestuff Reptr. 42, no. 23: P748-52 (Nov. 9, 1953).

To learn the extent of difference between sunlight and Fade-Ometer exposures, tests with 22 synthetic fiber samples exposed in four steps were made by 10 laboratories in their FDA-R Fade-Ometers. The results were

evaluated by members of the AATCC Committee on Colorfastness to Light by the use of the new gray scale adopted as a tentative method by the International Organization for Standardization for evaluating change in color. These results indicate that the character of fading is similar between sunlight and Fade-Ometer and the rate of fading, in many cases, faster in the Fade-Ometer. The proposed first draft of the gray scale is appended, as well as the test results in tabular form. 6 tables. E.S.

PHYSICAL TESTING—PAPER—BASIS WEIGHT

EKCO ELECTRONICS, LTD., *Southend-on-Sea, Essex, England.* Applying nucleonics to the measurement of paper substance. World's Paper Trade Rev. 140, no. 11: 803-4, 806 (Sept. 10, 1953).

Improvements in the new Ekco nucleonic thickness gage type N504 for measuring paper substance are described. 1 illustration. E.S.

PHYSICAL TESTING—PAPER—GLOSS

WINK, W. A., DELEVANTI, CYRIL H., JR., and VAN DEN AKKER, J. A. Instrumentation studies. LXXVII. Study on gloss. I. A goniophotometric study of high-gloss papers. Tappi 36, no. 12: 163-72A (December, 1953); *cf.* B.I.P.C. 23: 244.

This study was initiated for the purpose of obtaining basic information on the distribution of light reflected from the surfaces of high-gloss papers—such as cast-coated and similar papers—with the hope that this information may ultimately lead to the development of a satisfactory procedure for evaluating the gloss of such papers. These papers, which are a closer approximation to a mirrorlike reflector, present a problem in the measurement of gloss which lies beyond the scope of TAPPI Standard T 480 m-51. The measurements of the angular distribution of the intensity of the light reflected from the surfaces of coated and cast-coated papers for various fixed angles of illumination were made with a laboratory-type goniophotometer equipped with small source and receptor apertures. Fixed angles of illumination of 30, 45, 60, 75, and 80° (with respect to the perpendicular to the specimen) were involved in these measurements. The instrument and procedures are described in detail. Goniophotometric curves for 20 samples of coated and cast-coated papers (six of which were colored) are presented. These curves have been examined from the point of view of correlating the peak values of the curves (for a given angle of incidence) and the half-widths of the curves (width of curve in degrees at the level of half the peak value) with values obtained on a Bausch and Lomb glossmeter and with visual gloss ratings. It is tentatively concluded from this work that physical quantities relating to the visual estimation of gloss for a given angle of illumination and viewing are: (*a*) peak value of the specular reflectance, (*b*) half-width of the peak (or any other suitable description of slenderness), (*c*) flatness of the paper surface, and (*d*) the color and luminosity of light diffusely reflected by the paper. 2 tables, 23 figures, and 2 references. E.S.

PHYSICAL TESTING—PAPER—MOISTURE

SCHIE, ARNE J. The moisture-control system Schie & Straatveit. Norsk Skogind. 7, no. 11: 389-96, 398-404 (November, 1953). [In Norwegian; English summary] *cf.* B.I.P.C. 23: 221.

The author discusses the disadvantages of manual control of paper drying and different impulses used for measuring the moisture content of paper during its travel through the paper machine and for automatic control of the

drying process. The impulse applied in the Schie & Stråtveit system (U. S. patent 2,611,974 [Sept. 30, 1952]) is described by means of diagrams, based on empirical equations, which indicate that this impulse is a stringent function of the moisture content in the sheet. The construction of the instrument and its mode of operation are described. The drying of paper in the dry end has a great influence on paper quality; brief reference is made to the hygroscopic properties of cellulose fibers and conditioning of paper. The above instrument measures and records the moisture content in the machine as well as the cross-machine direction. Control instruments automatically keep the moisture content in the machine direction at a constant level. 5 tables and 17 figures.
E.S.

PHYSICAL TESTING—PAPER—SMOOTHNESS

ANON. Two smoothness testers used by P.A.T.R.A. World's Paper Trade Rev. 140, no. 12: 896 (Sept. 17, 1953).

The two smoothness testers used in the laboratories of the Printing, Packaging, and Allied Trades Research Association are a modification of the Chapman tester, a Canadian development, and the Bendtsen tester, a commercial instrument designed primarily for newsprint, which was developed in Denmark. 2 illustrations. E.S.

BECKMAN, NORMAN J., and SEARS, GEORGE R. Chapman smoothness. Progress Report Nine by The Institute of Paper Chemistry, *Appleton, Wis.* Am. Newspaper Publ. Assoc., Tech. Report no. 16: 33 p. (Nov. 6, 1953).

This ninth report by The Institute describes a continuation of the study of the Chapman smoothness tester as a means of characterizing newsprint. The instrument measures the smoothness of a surface in terms of the percentage of the surface that is in optical contact with the polished face of a glass prism when the specimen is pressed against the prism under known pressure. In the earlier report on the Chapman instrument (*cf.* B.I.P.C. 22: 273-4) it was noted that the smoothness values for some rubber surfaces were considerably greater than 100% at the higher pressures—an anomalous result. It is now shown that a modification of the procedure for standardization of the instrument leads to smoothness values no greater than 100% for the rubber surfaces tested. The smoothness of a paper specimen increases with continued application of pressure. It is shown that the smoothness of a newsprint increased by about 12% in the course of 20 minutes under pressure. The smoothness at a given pressure is permanently changed after the specimen has been subjected to a higher pressure. Heretofore, Chapman smoothness data have been presented by plotting smoothness versus pressure. The pressure is the nominal pressure, i.e., the pressure calculated with the assumption that the entire surface of the specimen bears load. However, only a fraction of the specimen surface is in contact with the prism and it is only this part of the surface that actually supports the load. What is termed the average local pressure is calculated by dividing the nominal pressure by the fraction of the specimen surface in optical contact with the prism. Plots of smoothness versus the average local pressure for a number of newsprints and several other papers are presented. The observed smoothness depends upon the nature of the material which backs the specimen in the smoothness tester. The backing material is the analog of the newspaper press blanket or the make-ready. The smoothness of a specimen is greater with a soft than with a hard backing. The influence of backing material is illustrated by smoothness data for a number of newsprints and several other papers with a range of backing materials. In agreement with the observations of other workers in regard to other properties of newsprint, it is found that the

Chapman smoothness of newsprint is permanently decreased by a temporary excursion to high R.H. conditions. Printed specimens may be examined visually in the Chapman instrument and the relationship between poorly inked areas and levelness of surface under pressure noted. In the case of gravure prints there is a pressure range in which there is good correlation between skips in the print and pits (i.e., out of contact areas) in the paper surface. In the case of letterpress prints from thin ink films there is a corresponding correlation between poorly inked areas and pits in the paper surface. There is little or no correlation in prints from heavy ink films. 6 tables, 23 diagrams, and 8 references. E.S.

PHYSICAL TESTING—PAPER—TEARING STRENGTH

ANON. Simple paper tests. Paper & Twine J. 27, no. 9: 9, 38 (November, 1953).

Instruments for measuring the tearing strength of paper and board—the Elmendorf, Marsh-Elmendorf, Polder, and Thwing-Albert testers—are briefly described. R.A.S.

PHYSICAL TESTING—PULP—BRIGHTNESS

LØSCHBRANDT, F., LORÅS, V., and RENGAARD, M. Brightness determinations of wet bleached pulp. 1. Empirical relationships between the brightness of wet and dry pulps. Norsk Skogind. 7, no. 11: 360-6 (November, 1953). [In English; Norwegian summary]

The relationship between the brightness of wet and dry bleached pulps was studied with the aid of two instruments, a Photovolt reflection meter (I) and an Eel reflectometer (II); the results were supplemented with those obtained on dry pulp on the P.F.I. brightness tester (III). (I) could be used without modifications; the light-weight measuring head of (II) had to be provided with a thick rubber ring, and the measurements had to be made in a box with black walls to prevent the penetration of outside light. In addition, the photocell had to be protected against the intrusion of water vapor with a glass plate and rubber packings. In the experiments, 28 commercial pulp samples with a (III) brightness varying from about 86 to 96% were used. After defibering in distilled water, flat cakes of approximately 10 grams each were formed. The brightness of the wet samples was always measured on the underside of the cakes, i.e., the one in contact with the filter bottom of the Büchner funnel used in their preparation. The cakes dried in an air bath at 40°C. were split into two layers and measured on the inner surfaces to avoid possible yellowing caused by drying. The brightness values were found to be considerably influenced by variations in consistency of the samples. For a $\pm$ 1% variation at a consistency of about 25%, the errors in brightness measurements amounted to about $\pm$ 0.4% for (I) and $\pm$ 0.3% for (II). With decreasing consistency, these errors increase considerably. The variations in brightness with consistency are nearly linear with the logarithm of consistency in the investigated range of 15-40%. When the consistency of the measured pulp is known, the brightness can readily be calculated for any selected reference consistency. The conversion factors for the two instruments employed in this study are given. The variation in brightness will depend upon the effective wavelength of the filters used in the instrument, as well as upon other factors which may vary within one and the same instrument. The existing relationship between brightness and consistency must therefore be determined for each case. Between the brightness of pulps measured at a certain consistency, and the brightness of the corresponding dry pulps also an almost straight-line relationship exists, as illustrated in a

graph and also shown in tabular form. However, these examples cannot be directly applied to commercial operations on account of two factors: the quality of water employed and the yellowing which takes place in the drier part. Each bleach plant must prepare its own conversion curves and check them frequently. A statistical evaluation of the data is given. 3 tables, 3 figures, and 3 references. E.S.

PHYSICAL TESTING—PULP—FREENESS

BECKER, R. J. The Canadian Standard freeness test versus a drainage time test for highly refined stock. Tappi 36, no. 12: 158-60A (December, 1953).

An evaluation of Canadian Standard freeness and of drainage time as measures of the high degree of refining found in the glassine-, greaseproof-, and condenser-paper field is made. The stock in question, as it reaches the headbox, is usually in a Canadian Standard freeness range below 100 ml. Data are presented which indicate that for highly refined stock a drainage test will yield more satisfactory and significant information than the freeness test; confirming literature references are cited. However, more data on drainage time should be collected and interpreted than the limited material here presented to substantiate the limitations of the freeness test for the glassine papermaker. 4 figures and 4 references. E.S.

PHYSICAL TESTING—WAX

YATES, W. J. TAPPI-ASTM Technical Committee on Petroleum Wax. Tappi 36, no. 12: 127-9A (December, 1953); *cf.* B.I.P.C. 23: 744.

Brief reports of the chairmen of the different sections of the committee are given as follows: Padgett, J. W., and Cushman, D. R. Strength tests, p. 127-8A; Schindler, H. Flow tests, p. 128A; Rather, J. B. Composition, p. 128A; Hitchcox, H. F. Wax blocking point, p. 128A; Borden, G. C., Jr., and Kirk, J. H. Sealing and laminating, p. 128A; Mueller, George P. Gloss and scuff, p. 128-9A; Hinds, G. P., Jr. Oxidation, p. 129A; and Shipman, L. A. Sensory tests, p. 129A. E.S.

PIGMENTS

BRILL, HAROLD C., and MACK, JAMES. Whitening paper's face. Du Pont Mag. 47, no. 6: 24-5 (December, 1953/January, 1954).

The Pigments Department of the Du Pont Company is planning direct sale of its paper additive product, "Ti-Pure" LW titanium dioxide; the product added to either the beater or as a coating is claimed to impart superior brightness and opacity. The department service laboratory has been equipped to meet problems in the use of the product and to test papers. 3 illustrations. R.A.S.

PLASTIC FILMS (NONCELLULOSIC)

MODERN PACKAGING ENCYCLOPEDIA. Properties of packaging films. Modern Packaging Encyclopedia, 1954: 108-9 (1953).

Packaging films of cellulose derivatives, rubber base, and synthetic resins are analyzed as to their general, mechanical, and chemical properties, and permanence. 1 chart. R.A.S.

SOUTHWICK, CHARLES A., JR. Plastic packaging films. Modern Packaging Encyclopedia, 1954: 92, 94-5, 99-102 (1953); *cf.* B.I.P.C. 18: 388.

A description of plastic films (cellulose acetate, ethylcellulose, polyethylene, Pliofilm, saran, Cry-O-Vac, and vinyl films) used for packaging similar to that in the previous reference is given. 7 illustrations. R.A.S.

PLASTICS

SEYMOUR, RAYMOND B., and SMITH, MARTIN H. Latest developments in use of plastic materials of construction. Paper Trade J. 137, no. 25: 33-4, 36 (Dec. 18, 1953).

Uses of plastics for materials of construction in pulp and paper mills are discussed, notably furan and vinyl resin cements used extensively in sulfite mills for joining tile to form linings for digesters, blow pits, storage tanks for chlorine dioxide bleach, and floors exposed to corrosives and chlorinated rubber-base coatings used on walls, overhead structures, and machinery. Temperature and pH which the various plastic construction materials will withstand are given, as well as precautions to be taken in the installation of the plastic linings. 3 illustrations. R.A.S.

POWER

HESLOP, J. P. Buying electricity for a paper mill. World's Paper Trade Rev. 140, no. 23: 1721-2, 1724, 1726, 1728 (Dec. 3, 1953).

With exclusive reference to electricity supplies in the Northwest of England, the author reviews briefly the requirements of the various sections of the paper industry and compares the quantities of electrical power produced by private generation and taken from the public supply. The circumstances influencing the adoption of private generation or purchased power are summarized. The level of prices of purchased energy and public-supply tariffs in force in England under the Electricity Act of 1947 are examined, with particular reference to the factors affecting the principles of the two-part tariffs which the author considers the most satisfactory basis for securing the cost actually incurred in providing the supply to a consumer. 5 tables and 5 references. E.S.

PRINTING AND PRINTER'S INK

CARLSSON, GÖSTA E. Some newer investigations of pigment paper. Grafiska Forskningslaboratoriet Medd. no. 31: 51-6 (January, 1953). [In Swedish; English summary]

In the photogravure process the step of printing the pigment paper (a bichromate sensitized gelatin paper, also called carbon tissue) (I) is difficult to control because many variables influence the sensitivity and gradation of (I). A review is given of the present knowledge of the effect of the following factors on these two properties: age and moisture content of (I), the bichromate concentration, temperature and pH of the sensitizing solution, the time interval between sensitizing and printing, and the R.H. during this time and the time between printing and developing. 2 tables, 4 figures, and 7 references. E.S.

CARLSSON, GÖSTA E., and OLSSON, INGEMAR. A method for the determination of the bichromate concentration in the sensitizing solutions for carbon tissues. Grafiska Forskningslaboratoriet Medd. no. 31: 57-8 (January, 1953). [In Swedish; English summary]

Since the bichromate concentration (I) in sensitizing solutions for carbon tissues affects the gradation and sensitivity of the paper, it is advisable to control (I). A simple method for the determination of (I) by reduction with iodide and titration with sodium thiosulfate is described. E.S.

MODERN PACKAGING ENCYCLOPEDIA. The graphic arts. Modern Packaging Encyclopedia, 1954: 525-34, 536, 538, 541-2, 545, 549-50 (1953).

Operations in which the graphic arts are used in the conversion of paper and board are discussed in the following articles, listed by authors and titles: Anon. Using the graphic arts effectively, p. 526; Zettlemoyer, A. C. Letterpress—4 illustrations, p. 526-8; Rossotti, Charles C. Offset lithography—2 figures, p. 528-9; Deeney, James J. Flexography—2 illustrations, p. 529-30; Goat, Arthur Fred. Rotogravure—2 illustrations, p. 530-1; Grossman, J. J. Silk-screen process—1 illustration, p. 531-2; Royer, Ralph. Decalcomania—2 illustrations, p. 532-3; Morse, Alfred A. Roll-leaf marking—2 illustrations, p. 533-4; Forsman, John H. Embossing—1 illustration, p. 534, 536, 538; Walker, William C. Principles of ink selection, p. 538, 541-2, 545, 549; Arens, Egmont. Illustration, p. 549; and Bernhard, Lucian. Type, p. 550. R.A.S.

PRINTING AND PRINTER'S INK—ANILINE PROCESS

VINER, JOSEPH W. Flexographic printing. Tech. Assoc. Graphic Arts, Proc. 5: 131-6; discussion: 137 (1953).

Plates, advantages and limitations, presses, mounting and registering, inks and coatings, and equipment for drying in the flexographic printing process are discussed. 1 figure. R.A.S.

PRINTING AND PRINTER'S INK—XEROGRAPHY

REID, WILLIAM T. Xerography—from fable to fact. Battelle Tech. Rev. 2, no. 11: 118-22 (November, 1953); *cf.* B.I.P.C. 23: 435.

The author discusses the evolution, operation, equipment, uses, and future of xerography, an electro-mechanical process of dry printing. 8 figures. R.A.S.

PYRITES

HEGEMAN, J. T. How to get sulphur dioxide from pyrrhotite. Paper Trade J. 137, no. 19: 14-16 (Nov. 6, 1953); Pulp Paper Mag. Can. 54, no. 13: 123-5 (December, 1953); Paper Ind. 35, no. 10: 1118-19 (January, 1954); *cf.* B.I.P.C. 23: 436.

Following a brief description of the Dorrco FluoSolids system of roasting ores under closely controlled conditions, the plant installations and operating experience of the Brown Co. at Berlin, N.H. in roasting pyrrhotite to produce 12-14% sulfur dioxide gas are discussed. Since it was the first unit of its kind—operation started in May, 1952—problems have been encountered and certain changes made. The maintenance of the system has been greater than anticipated; the original constructional materials did not withstand the severe roasting conditions and had to be replaced with abrasion- and corrosion-resistant materials in many instances. Nozzles of improved design in the reactor constriction plate had to be installed. Despite repairs, the plant ran 80% of the time during the first year of operation; over 27,000 tons of pyrrhotite were processed, which is equivalent to over 9700 tons of sulfur. A primary feature of the FluoSolids system is the ease with which the unit can be started up, operated, and shut down. 3 tables, 1 flowsheet, and 6 references. E.S.

RAW MATERIALS

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION. Expanding demand for paper; use of non-conven-

tional materials and hardwoods. World's Paper Trade Rev. 140, no. 17: 1242, 1244 (Oct. 22, 1953).

The section "The paper shortage" of the recent publication by Unesco and FAO "Paper for printing—today and tomorrow," pages 47-9 is reprinted. E.S.

RAYON—VISCOSE PROCESS

HEMMER, AXEL. Svenska Rayon Aktiebolaget. Svensk Papperstidn. 56, no. 21: 840-2 (Nov. 15, 1953). [In Swedish]

The history leading to the formation of the Swedish company in 1941 and to the construction of a rayon and staple-fiber mill at Älvenäs (principally selected as site on account of its transport and water facilities) is described. The factory began operations in 1943 and recently celebrated its tenth anniversary. The growth of the mill, including the installation of the continuous process for rayon manufacture developed by the Industrial Rayon Corp. in Cleveland—for which Courteaulds in England holds the European patents and selling rights—is recorded. The future outlook for rayon is reviewed briefly. 3 illustrations. E.S.

KLEINERT, THEODOR N., and WINCOR, WILHELM. Bound calcium in dissolving pulps and its behavior in the viscose process. III. Precipitation of lime from the alkali steep liquors. Svensk Papperstidn. 56, no. 22: 874-5 (Nov. 30, 1953). [In German] *cf.* B.I.P.C. 22: 767-8.

The calcium in dissolving pulps is usually in the form of salts of the hemicellulosic carboxyl groups. These salts are soluble in alkali and are removed in steeping. When the steep liquor is re-used, however, this soluble material reacts with sodium carbonate in the lye, and the resulting calcium carbonate precipitated and adsorbed on fiber particles and flocculated hemicelluloses can produce sieve stoppage. The calcium content of the pulp must be kept low to prevent such filtration troubles. 1 table and 9 references. K.W.,Jr.

SAMUELSON, OLOF, and JONSÉN, HEIMER. Influence of some pulp properties upon dissolution of cellulose xanthate. Svensk Papperstidn. 56, no. 22: 866-73 (Nov. 30, 1953). [In English; German and Swedish summaries]

The authors have investigated the effect of pulp viscosity and of cold alkali purification (mercerization) on the filtering properties of viscose and on the ease of solution during emulsion xanthation. High viscosity lowers both filterability and ease of solution. Sulfate pulp did not filter as well as sulfite pulps of the same viscosity, which is explained by the fact that the outer layers of the fiber are more severely attacked during sulfite cooking. Good filterability with sulfate pulps can be obtained by the use of large excesses of carbon disulfide. The cold alkali treatment does not produce parallel effects between emulsion xanthation and the viscose pulp. It raises the optimal alkali concentration for solubility in the former and lowers it in the latter. For cotton linters the mercerized pulp is more easily soluble in either case. This has been explained on the basis of two effects of mercerization: (*a*) intracrystalline swelling during emulsion xanthation occurs at a lower sodium hydroxide concentration, which facilitates dissolution, and (*b*) rapid xanthation favors a less uniform macroheterogeneous reaction. Different results are obtained depending on whether (*a*) or (*b*) predominates. 4 tables, 4 figures, and 55 references. K.W.,Jr.

RESEARCH

CHEMICAL WEEK. Industrial research—the big picture. Chem. Week 73, no. 24: 40-4, 46, 48, 50 (Dec. 12, 1953).

Statistics are presented in the form of bar graphs showing the picture of research as viewed by the various industries. Data are presented on the following (all figures in parentheses refer to paper, lumber, and wood): how popular it is—proportion of companies supporting research (29%); what it costs—research outlay as a percent of net sales (1%); where it's spent (within company 98%, at nonprofit organizations 1.5%, and elsewhere 0.5%); the trend is up (15%); what it costs to keep a researcher—expenditures per research worker ($7200); how many are professionals (51%); and proportion of companies supporting research and research outlay as a percent of net sales. 8 graphs. R.A.S.

EBERL, J. J. Research as a career in today's pulp and paper industry. Paper Trade J. 137, no. 21: 24, 26, 28 (Nov. 20, 1953).

The author points out opportunities in the field of industrial research in the pulp and paper industry today and lists requirements for successful research under the main topics: research personnel (knowledge, initiative, imagination, judgment, honesty, optimism, leadership, and co-operativeness), equipment, selection of problems, and environment. A few examples of research accomplishments are cited to demonstrate the way in which research is put to work in a paper business and the manner in which the research man can make contributions. 1 table. R.A.S.

FROST, FREDERICK H. The scope of research. Tappi 36, no. 12: 18A, 20A, 22A, 24A, 26A (December, 1953).

Since the scope of research is directly tied into the versatility and adaptability of the basic raw materials available to an industry, that of the pulp and paper industry is unlimited. Individual companies must impose their own limitations based on useful products and processes, available funds, sales organization, available raw materials, and related factors. Results of recent research in the industry are described from each of the divisions of pure research, idea production, and applied research, all within the scope of a research program. R.A.S.

MOYER, WENDELL W. The stimulation of research. Tappi 36, no. 12: 26A, 28A, 30A (December, 1953).

The author states that stimulation of the research worker, positive or negative, has much to do with variations in the performance of a research program. Considered as favorable stimuli are sincere interest of top management, efficient direction of research efforts, fostering of a sense of freedom and communication of ideas, and the recognition of individual achievements in useful end products. Powerful stimuli to achieve a negative effect are the forcing technique and interference in scientific work by unqualified laymen. R.A.S.

SCHUR, MILTON O. Selling research to management and to labor. Tappi 36, no. 12: 30A, 32A, 34A (December, 1953).

The results of research are considered generally sufficient to convince management of their value as a businessman's speculation with good odds for gain; the attitude of labor toward research is usually favorable if the time has been taken to explain the significance of the project. A sample situation shows problems which occurred in relations between a research manager and a sales manager. 4 references. R.A.S.

STEPHENS, H. N. Organization for research. Tappi 36, no. 12: 12A, 14A, 16A, 18A (December, 1953).

The central factor in research organization is leadership ability in positions of responsibility; the result of this leadership is the capacity to perpetuate and multiply leadership by hiring and developing strong subordinates. The relative contributions of scientific and leadership abilities are compared. The organization chart is viewed as incidental, an object chosen to conform to the organization and changed with organization changes. R.A.S.

RESEARCH LABORATORIES

ANON. A brief report of the activities of the Institut für Lebensmitteltechnologie und Verpackung, München during the year 1952 in the field of packaging. Neue Verpackung 6, no. 9: 411-13 (September, 1953). [In German]

The activities in the field of material and package testing and practical applications of the results obtained in the German institute are reviewed briefly. 4 illustrations. E.S.

ANON. The research laboratory of Mo och Domsjö Aktiebolag. Svensk Papperstidn. 56, no. 22: 876-9 (Nov. 30, 1953). [In Swedish]

The four departments of the research laboratory (pulp, paper, cellulose derivatives, and organic chemistry), including analytical and physicochemical laboratories, a library, workshops, a glass-blowing laboratory, and storerooms, are housed in two buildings. Different sections of the installations are depicted in 28 illustrations. E.S.

CARLSSON, GÖSTA E. Report of the activities of the Grafiska Forskningslaboratoriet during the fiscal year 1952-1953. Grafiska Forskningslaboratoriet Medd. no. 32: 1-35 (November, 1953). [In Swedish]

Research activities (ink and oil absorption and dimensional stability of paper, bending properties of board, ink transfer, drying agents for offset inks, the chemistry of the offset printing process, the development of Grafo Clean—an effective addition to the damping water, and studies with stereotyping mats), technical services rendered, and publications are reviewed. 7 illustrations. E.S.

SAFETY

COLLINS, DONALD O. What a superintendent expects of a safety program. Paper Trade J. 137, no. 19: 24-6 (Nov. 6, 1953).

A well-rounded and sound safety program, instituted, supported, and sustained by top management, should work toward the following objectives: better placement procedures, better training methods, proper supervisory training, use of job analysis, good mill housekeeping, employee safety suggestions, publication of good safety records, and study of injury reports. R.A.S.

MCLELLAN, W. A. The aftermath of an accident or rehabilitation. Pulp Paper Mag. Can. 54, no. 12: 208 (November, 1953).

The author recommends that the rehabilitation of any injured employee be furthered by regular visits by company representatives. R.A.S.

SCHWEISHEIMER, W. Don't lift it alone! Pulp Paper Mag. Can. 54, no. 12: 212, 214, 216-17 (November, 1953).

Effects of heavy lifting in the paper industry on the workers' back, shoulders, abdominal muscles, and heart are described, and correct methods and safe amounts of lifting are given. The most important safety measure for lifting is to ask for help in handling a heavy load. R.A.S.

WEISBORD, ALBERT. Accident prevention in boxmaking plants. Am. Boxmaker 42, no. 12: 16-17 (December, 1953); *cf.* B.I.P.C. 24: 310.

The accident frequency-rate figures for 1952 show the rate for the paperboard container and box industry to be 17.0 (170 disabling injury accidents for every million man-hours of exposure to work); this was 1.1 below the rate for 1951. In comparison with other industries listed as having similar intrinsic hazards, the rate is much higher. Possible effects of this high rate on profits to management, reasons for the poor position, and suggestions for improving the situation are listed. Figures given in this and the previous reference are published in a report issued by the U. S. Department of Labor. 6 tables. R.A.S.

SALESMEN AND SALESMANSHIP

FRANKLIN, S. W. Evaluating the program of modern sales management. Paper & Paper Products 95, no. 11: 2, 14, 26 (Dec. 5, 1953); *cf.* B.I.P.C. 24: 310.

To enable companies to evaluate the progress of a sales program, the author sets up standards against which measurement can be made. Five forms for this evaluation, to be filled out by the sales manager, are reprinted and include a "lost order" questionnaire, monthly training review, achievement record (every three months), evaluation report on salesman, analysis of sales effectiveness, and report on salesman leaving. R.A.S.

FRANKLIN, S. W. Modern sales management at work. Paper & Paper Products 95, no. 12: 2-3, 12 (Dec. 20, 1953).

The author concludes his series of articles on sales management by enumerating 10 criteria to observe in the successful application of modern sales-management principles. They are: a continual recruiting program, careful selection, thorough training program, liberal salaries, constant recognition, active management, instillation of personal prestige, continual increase in power, maintenance of high morale, and meritorious sales management. R.A.S.

SCOTT PAPER COMPANY. Scott sales department recruits and trains future executives. Paper Ind. 35, no. 9: 1006-9 (December, 1953).

The program at the company, which it expects will double its paper sales by 1958, consists mainly of ever-increasing attention being paid to the recruiting and training of future top sales executives. The methods of procurement of sales personnel, interview-appraisal of prospective sales personnel, sales training program (including six weeks' indoctrination, training on-the-job, orientation to management point of view, and district manager assignment and training), and an employee attitude survey are described. 2 illustrations. R.A.S.

SEMI-CHEMICAL PULPING PROCESS

ANON. New pulp source for fine papers. Taylor Technol. 6, no. 2: 3-7 (Fall, 1953); *cf.* B.I.P.C. 23: 825.

The utilization of hardwoods in the production of fine papers at the Mechanicville, N.Y. mill of the West Virginia Pulp and Paper Co. and the semichemical bleaching process which makes this possible are discussed. A description is given of the cooking and three-stage bleaching procedures, with particular reference to the automatic control instruments employed. 8 figures. R.A.S.

HUSBAND, R. M. Semichemical and high-yield chemical pulping of hardwoods with sodium sulphite and sodium bisulphite. Tappi 36, no. 12: 529-34 (December, 1953).

The acids hydrolyzed from hardwood during digestion facilitate the use of the sodium salts of sulfurous acid in semichemical and high-yield chemical pulping of hardwoods. The ratios of the amount of sodium base to the amount of applied sulfur dioxide and to the wood are qualitatively shown to be very important. White birch chips digested with 10% of sodium sulfite (equivalent to 8.4% of sodium carbonate and 2.5% of sulfur) provided 74% of semichemical pulp with improved strength characteristics. These properties were further improved by bleaching in three stages with 16% of chlorine. A pulp of equal chlorine demand but inferior strength properties before and after bleaching was obtained by cooking under the same conditions with 30% of sodium sulfite. A 55% yield of chemical pulp with good strength properties was obtained from birch chips digested with sodium bisulfite equivalent to 14.1% of sodium carbonate and 8.5% of sulfur. 5 tables, 2 figures, and 19 references. E.S.

MACLAURIN, D. J., and PECKHAM, J. R. Semichemical pulping of southern red oak. Tappi 36, no. 12: 557-60 (December, 1953).

High-yield pulps suitable for corrugating medium have been prepared from southern red oak (*Quercus rubra*) by the semikraft and the neutral sodium sulfite processes. A single cold caustic cook was made. The semikraft cooks were made at maximum temperatures of 150, 160, and 170°C. with a constant total cooking time of 150 minutes. The neutral sulfite cooks were made at 160, 168, and 176° and 270 minutes total time. Chemical dosage was varied at each temperature level. Within these ranges of pulping conditions, the yields from the semikraft cooks were not greatly affected by maximum cooking temperature. Yield decreased some 4% when the maximum temperature was raised from 150 to 170°. The yields of these cooks were, however, greatly affected by changes in chemical dosage. When the active alkali was increased from 6 to 12%, yield decreased from 80 down to 65%. In general, the opposite effects appeared in the neutral sulfite cooks. Here, yields decreased about 8% when the maximum temperature was raised from 160 to 176°, but increasing the sodium sulfite dosage from 6 up to 18% decreased the yield only some 4%. Semikraft handsheet flat-crush strength improved with decreasing yield (from about 26 p.s.i. at 80% yield to 34 p.s.i. at 65% yield), but was not greatly influenced by maximum temperature at a given yield. Neutral sulfite flat-crush strengths indicated the same trends, but the relationships were not as well defined. The neutral sulfite pulps were stronger and lighter colored than the semikraft pulps. The cold caustic pulp was very weak but light colored. Both the neutral sulfite and the semikraft oak pulps had lower flat-crush than a typical corrugating medium neutral sulfite pulp from aspen. 6 tables, 4 figures, and 2 references. E.S.

MACLAURIN, D. J., PECKHAM, J. R., and WEBER, W. B. A comparison of kraft and neutral sulphite semichemical pulps from birch and maple. Tappi 36, no. 12: 553-7 (December, 1953).

Kraft and neutral sulfite semichemical pulps have been prepared and bleached from a mixture of rock and white maple (*Acer saccharum* and *Acer saccharinum*) and a mixture of yellow and white birch (*Betula lutea* and *Betula papyrifera*). Unbleached yields were about 50 to 52% for the krafts, 65 and 70% for the maple semichemical, and 70 and 75% for the birch semichemical. With an arbitrary three-stage (chlorination-caustic extraction-calcium hypochlorite) bleach to about 80% G.E. brightness, the chlorine requirements were about 3 and 7% for the maple and birch krafts, respectively, 14 and 18% for the maple semichemicals, and 14 and 20% for the birch semichemicals. Bleached yields were 49 to 50% for the krafts, 51 and 53% for the maple semichemicals, and 58 and 59% for the birch semichemicals. The birch was more difficult to pulp than the maple, particularly by the semichemical process. Trends indicated that for the same pulping conditions, birch gave a higher yield of stronger pulp. For equal yields it appears easier to bleach birch semichemical than maple semichemical, and maple kraft than birch kraft. At 700-ml. S.-R. freeness, all the pulps had useful strengths. The unbleached kraft pulps were stronger, easier bleaching, and considerably harder to beat than the unbleached semichemical pulps. Bleaching lowered the kraft and raised the semichemical strengths so that the bleached semichemical pulps were stronger than the bleached kraft pulps and about equal to the unbleached kraft pulps. Bleaching did not affect the beating characteristics of the kraft pulps. The bleached semichemical pulps were much easier to beat than the unbleached semichemical pulps. All bleached semichemicals contained many colored shives. All bleached birch pulps and the bleached higher-yield maple semichemical pulps had low opacity. All of the pulps appeared potentially suitable for selected grades of paper. 4 tables, 1 figure, and 1 reference. E.S.

SETUP BOXES

ANON. First British paper box & carton design competition. Brit. Packer 15, no. 11: 747-52 (November, 1953); Paper Box Bag Maker: 216-20 (November, 1953).

Prize winners in the design contest are pictured; the competition was divided into one group for rigid, rigid collapsible, or composite containers and the other for cartons. Awards were based on display value, protective qualities, general suitability, graphic design, and ingenuity. 27 illustrations in the first and 15 in the second reference. R.A.S.

SHIPPING CONTAINERS

ANON. Citrus fruit boxes of paperboard now offered by St. Joe Paper Co. Paper Trade J. 137, no. 26: 14, 16 (Dec. 25, 1953).

The kraft board container offered by the St. Joe Paper Co., Jacksonville, Fla. for shipment of oranges and grapefruit is described. The boxes are made in the standard 1-3/5 bushel and the 4/5 bushel sizes, as well as various-size gift fruit boxes. The standard box is of the same dimensions as the standard nailed-up box; is entirely die-cut from one piece; requires no stitching, stapling, or binding; is formed from floor stocks; has a telescoping top to accommodate high packs; is closed with a positive metal clip; and has a center partition treated with Phenodor. 3 illustrations. R.A.S.

HINDE & DAUCH PAPER COMPANY. Corrugated container for nails replaces kegs. Packaging Parade 21, no. 251: 97 (December, 1953); Fibre Containers 38, no. 12: 169 (December, 1953).

The Hevi-Duty box, currently being used for shipping nails, nuts, bolts, bulk chain, and the like, is a corrugated container constructed with weatherproof adhesive which is delivered to the user in two flat sheets, properly scored and cut, forming a bottom and telescoping top; the two parts are held together with wire. 1 illustration. R.A.S.

MODERN PACKAGING. Standards for cases. Modern Packaging 27, no. 4: 114-15, 197 (December, 1953).

Philadelphia and Southern California food distributor groups have proposed five points of design to facilitate handling of shipping cases and incorporated them in a model corrugated case rectangular in shape. Identity and pack information is carried on all four side faces; on the ends are two blank marking spots for warehouse use. 3 illustrations. R.A.S.

MODERN PACKAGING ENCYCLOPEDIA. Shipping containers. Modern Packaging Encyclopedia, 1954: 609-14, 617-18, 621-30 (1953).

The various types of shipping containers of interest to the board industry are discussed in the following articles, listed by authors and titles: Lincoln, W. B., Jr. Corrugated and solid fibre containers—1 table and 22 figures, p. 610-14; Mather, Glenn. Fibre drums—19 illustrations and 1 reference, p. 621-3; and Salisbury, Garth. Heavy-duty bags—3 illustrations, p. 629-30. R.A.S.

U. S. FOREST PRODUCTS LABORATORY. *Division of Materiel Containers.* Selecting containers for air shipments. Am. Boxmaker 42, no. 12: 13-15 (December, 1953).

The container selection chart for air shipments prepared by the division of the laboratory—the use of which is credited with enabling the Air Force to reduce the weight of its packaging materials more than 50%—and directions for the use of the chart are presented. 1 chart. R.A.S.

SHIPPING CONTAINERS—TESTING

AMERICAN SOCIETY FOR TESTING MATERIALS. WVP of shipping containers. Modern Packaging 27, no. 4: 144-5, 196-7 (December, 1953).

The tentative method for the procedure for evaluating the water-vapor permeability of large-bulk shipping containers (too large to be placed in conventional WVP cabinets) by the cycle method, adopted by the society as ASTM Designation: D1276-53T, is outlined in detail. 3 figures. R.A.S.

SLIME PREVENTION

WILLIAMS, A. E. Micro-organism control in the pulp and paper industry. World's Paper Trade Rev. 140, Technical Convention no.: 38, 40, 42, 45-6, 48, 50 (November, 1953).

Reference is made to two groups of chemicals for combating slime in pulp and paper mills—the rather toxic organomercurials (of which phenylmercuric acetate is the most commonly used) and the less toxic chlorinated phenols, of which sodium pentachlorophenate or Santobrite (I) is the most popular. The article deals principally with (I), including biological data, typical applica-

tions (pulp logs in storage, stored lap pulp, board, and coated paper), shock treatment, and different types of dosing equipment for the addition of (I) either in solution or as a dry powder. Precautions in handling (I) are also listed. 1 table and 4 illustrations. E.S.

SODA MILLS

ANON. New Mead mill pulp making facilities adds to soda pulp production. Paper Mill News 76, no. 46: 54, 56, 58, 60, 62 (Nov. 14, 1953); Pulp & Paper 27, no. 13: 94-6, 98, 114 (December, 1953); Tappi 36, no. 12: 112-16A (December, 1953); *cf.* B.I.P.C. 24: 227.

A description of the bleached soda pulp mill of the Mead Corp. at Chillicothe, Ohio, similar to that in the previous reference, is given. 5 illustrations in the first, 11 figures in the second, and 6 illustrations in the third reference. R.A.S.

STANDARDIZATION

ANZENHOFER, RUDOLF. Shipment of linen goods in boxes. Verpackungs Rundschau no. 11: 490-2 (November, 1953). [In German]

The article is essentially a plea for standardization in folding linen goods by the different manufacturers, with consequent reduction in sizes and shapes of the cartons in which they are packaged, either individually or in sets. The disadvantages resulting from the multitude of carton sizes now in use in packaging, safe transport, and storing by the retail trade are enumerated. Examples of transport damage are given and suggestions for improved packing in standard sizes are made. 1 table and 8 figures. E.S.

STARCH

WOOD, L. J., JR., and MAZEAU, J. R. New techniques for enzyme converting starch. Tappi 36, no. 12: 141-3A (December, 1953).

The author discusses the advantages of chemically substituted starches (I) with a less variable enzyme demand, particularly for size-press applications. (I) require less enzyme for conversion to a suitable viscosity; a lower solids content can be used for the size solution, resulting in an appreciable saving in starch-sizing cost. (I) also show much less setback than converted pearl cornstarch and have a longer working life. Progress in this direction is limited by qualities and economic considerations; it depends on the willingness of the paper industry to pay for the increased cost of manufacturing such starches. 1 table. E.S.

STATISTICAL METHODS

BICKING, CHARLES A. The fundamentals of control charts. Tappi 36, no. 12: 544-9 (December, 1953).

There are some limitations to the direct application of control charts to production control in the pulp and paper industry. However, in the past few years, more than 50 articles on statistics have appeared in journals serving the trade. Many of these have involved variations in conventional control charts. This is evidence of the substantial utility to the industry of the control chart as a method of analyzing data and as a means of process control after the proper control points have been identified by analytical means. One of the major problems to be overcome in any particular application is the rational subgrouping of data to arrive at appropriate limits for the chart. The choice of grouping depends on more information about the sources of variation in

paper quality than is usually on hand. This lack is being overcome as more is learned about the variability of paper testing and sampling techniques. New types of measurement devices such as beta gages are helping to accumulate the basic variation information needed for intelligent chart control. Inherent in the success of any plan of control is a method for obtaining positive action to correct causes of lack of control as they occur. This means that the limits must be established on economic bases as well as that supervision must be ready to make changes upon the advice of the quality-control engineer. Finally, if the charts are intended as a means of current control of the output of a paper machine, they must be sufficiently simple for any operator to use and understand. The advantages of the quality-control program must be kept before the whole organization as constantly as any other important program, such as safety. 1 table, 3 figures, and 17 references. E.S.

STEAM POWER

BRITISH PRODUCTIVITY COUNCIL. Paper industry and fuel conservation. World's Paper Trade Rev. 140, no. 12: 844, 846, 848, 851 (Sept. 17, 1953); Paper-Maker (London) 126, no. 3: 176-7, 184 (September, 1953).

An excerpt from the productivity report on fuel conservation dealing with paper and broad manufacture is given. The use of high-pressure steam, the topping technique, use of flash steam at low pressure, heat recovery from the drying sections of the paper machine, and possibilities for reducing power consumption in the papermaking process are discussed. 2 tables. E.S.

G. W. B. ELECTRIC FURNACES, LTD., *Watford By-pass, Bushey, Herts., England.* Electrode steam raisers. World's Paper Trade Rev. 140, no. 11: 796, 798 (Sept. 10, 1953).

Methods for improving the efficiency of steam-generating plants with electrode steam raisers are described, whereby major reconstruction schemes can be avoided. 1 illustration. E.S.

STOCK PREPARATION

PEARSON, J. H. Control method developed for stock preparation system. Tappi 36, no. 12: 149-52A (December, 1953).

The systems described include: white-water regulation in cleaning systems as a new approach to consistency control; measurement of make-up and wash-down water in beater-room batch operation; stock-capacity control at the jordan headbox for controlling throughput and eliminating overflow at the headbox; stock capacity control for the machine headbox; a special Hydrafiner control for a Duocycling system; and a suction couch control of jordans. 8 figures. E.S.

STRAW

ASSELMAN, TH. H., MULLER, F. M., and SMOLDERS, P. M. Studies on the digestion of rye straw with caustic soda. Treatise no. 2 of the Netherlands Experiment Station for the Utilization of Straw. [Groningen, Proefstation voor Stroverwerking, 1953] 27 p. + 34 unnumb. p. with graphs + 15 tables (14 fold.).

A laboratory study for determining the optimum conditions of sodium hydroxide concentration, temperature, and straw-liquor ratio in the alkaline pulping of rye straw is described; the cooking period always amounted to four hours. After cooking, the yields of total pulp, screened pulp, screenings,

and screening loss were determined; the screened pulps were beaten in a Jokro mill for different periods of time. The samples of beaten pulp were tested for the percentage retained on a 60-mesh screen, drainage time on a handsheet mold, and after sheet formation, for breaking length, tear, and folding endurance. The data were statistically evaluated by trend analysis and analysis of variance. The most important results can be summarized as follows: A 2% increase of caustic soda caused a decrease of 1.3% in the yield of screened pulp, and a 15°C. increase in temperature a decrease of 0.8%, whereas a maximum occurred at a 1:6 straw-liquor ratio. The highest yield of screened pulp amounted to 52.5% and was obtained at 130° with 13% caustic soda and a ratio of 1:6. A 2% increase in caustic soda caused a moderate decrease in breaking length, but a marked increase in tear resistance. A 15° increase in temperature caused a marked decrease in breaking length and a small increase in tear, with indication of a minimum at 145°. At this temperature sharp maxima in folding number and mean drainage time occured, whereas the percentage of pulp retained on the 60-mesh screen showed a rather weak maximum. The straw-liquor ratio did not exert a significant influence on pulp properties, with the exception of a rather weak minimum of the drainage time at 1:125. The best over-all result is probably obtained by cooking at 130° with 13% caustic soda; however, when stress is laid upon optimum tear resistance, the percentage of caustic soda should probably not be lower than 15% and the temperature not less than 160°. For an optimum folding endurance, a cooking temperature of 145° appears to be essential. 15 tables, 340 graphs, and 12 footnotes. E.S.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Raw materials for more paper; F.A.O. survey of straw pulping processes. World's Paper Trade Rev. 140, no. 10: 691-2, 694, 696, 698 (Sept. 3, 1953); *cf.* B.I.P.C. 24: 133.

The text on pages 93-101 of the previous reference (dealing with the utilization and pulping of straw) is reprinted. R.A.S.

STREAM POLLUTION

MURDOCK, HAROLD R. Industrial wastes; some data on toxicity of metals in wastes to fish life are presented. Ind. Eng. Chem. 45, no. 12: 99-100A, 102A (December, 1953).

Some of the pertinent data presented in the reviews by Doudoroff and Katz (*cf.* B.I.P.C. 21: 271; 23:919) are reviewed. 1 table and 3 references. E.S.

SULFATE MILLS

ANON. International's Natchez, Miss. mill doubles capacity producing for dissolving pulp. Paper Mill News 76, no. 46: 128, 130 (Nov. 14, 1953); *cf.* B.I.P.C. 24: 143.

The system and equipment used for producing dissolving pulp and paper pulp at the Natchez mill of the Southern Kraft Division of the International Paper Co. are described; the information is similar to that in the previous reference. 7 illustrations. R.A.S.

ANON. Weyerhaeuser's $20,000,000 Everett pulp mill now in full scale production. Paper Mill News 76, no. 46: 66, 72, 74-5, 78, 80, 82, 85, 89, 132 (Nov. 14, 1953); *cf.* B.I.P.C. 24: 229-30.

The description of the 250-ton bleached kraft pulp mill of the Weyerhaeuser

Timber Co. now in full-scale production at Everett, Wash. is similar to that in the previous reference. A list of the mill-equipment suppliers is appended. 23 illustrations. R.A.S.

SULFITE PROCESS

JACKSON, GEORGE E. Rayonier sulfur dioxide recovery ends Fernandina air nuisance and saves sulfur. Pulp & Paper 27, no. 13: 60-2, 64 (December, 1953).

The installation and operation of a sulfur dioxide recovery system to eliminate the nuisance of blow gases is described. The recovery system was correlated with a 25% increase in plant capacity. Some additional cooking acid required for the new (fifth) digester is supplied by expanded acid-plant facilities, but a substantial portion of the sulfur requirement is contributed by the recovery system. The following steps are involved: The steam in the digester blow gases is condensed in a countercurrent contact condenser. The gases leaving this condenser are cooled in a tubular surface condenser, and the cooled gases are compressed by a high-speed rotary blower. The compressed gases from the blower enter the absorption tower at the base and rise countercurrent to refrigerated water which absorbs the sulfur dioxide, whereas the inert gases are discharged from the top to the atmosphere. The sulfurous acid formed is collected in a storage tank at the foot of the absorption tower and used at a uniform rate in the acid plant. An elaborate electrical system was designed to ensure the safety of operators when a digester is blown. The system was developed from operational data when four digesters were in use. The addition of a fifth unit was followed by changes in operational procedures in cooking which lowered the sulfur dioxide content of the blow gases, so that the quantity of acid which the original design indicated cannot be realized. The results to date give a recovery of 1000 pounds of sulfur/blow, which amounts to about eight tons of sulfur/day, produced as 1.5-2% sulfurous acid. The loss of sulfur dioxide from the absorption tower vent is kept below 3% and averages about 1.5%; this is sufficiently low to avoid detection beyond the mill site. 1 flowsheet and 5 illustrations. E.S.

TALL OIL

PATRICK, P. D., JR., BESTUL, M. G., and GRESSANG, ROBERT W. Esters of distilled and acid refined tall oil as varnish vehicles. Tappi 36, no. 12: 561-4 (December, 1953).

Glycerol esters of three representative acid-refined and four distilled tall oils were prepared, made into varnishes, and evaluated for film properties. Neither type of tall oil gave ester varnishes which dried tack-free in 18 hours. The acid-refined tall oil esters, because of their higher rosin acids content, gave harder films. Water and alkali resistance of both types were moderate to poor and roughly comparable. Alkyd resins (24% phthalic anhydride) modified with the distilled tall oils gave varnishes of 10 to 11 color Gardner and Z-6 viscosity at 100% solids. Alkyd varnish films dried tack-free in 17 to 18 hours, had good hardness, flexibility, and moderate to poor alkali and water resistance. Glycerol ester varnishes of a distilled and an acid-refined tall oil were blended with a commercial 20-gal. tung oil modified phenolic resin varnish in varying proportions up to 70% tall oil ester by weight of the total varnish solids. Film evaluation showed that up to 50% glycerol ester of either type tall oil can be blended with the commercial varnish to obtain a vehicle which dries tack-free overnight, has good flexibility, and which is suited for use where water and alkali exposure are not critical. 7 tables and 2 references. E.S.

STEIN, MAX. Soap from tall oil. Soap Sanit. Chemicals 29, no. 12: 99, 105 (December, 1953).

This is a translation of a German article which appeared originally in *Seifen-Oele-Fette-Wachse* in 1953. The chemical constants of tall oil fatty and rosin acids are given. The suitability of modern tall oil acids for the manufacture of soft and curd soaps and the substitution of colophony with tall oil rosin in curd soaps are described. Paper wrapping of common soft soap has in the past proved impracticable because the high alkali content eventually destroyed every package unless specially impregnated paper was used. In addition, ordinary soft soap is not stable to heat or cold. Neither of these objections is valid in the case of tall oil soft soap, and a paper-packaged soft soap marketed in Germany as a branded product has become feasible. E.S.

WASTE PAPER

BROCKIE, W. Waste paper as a fibrous raw material. World's Paper Trade Rev. 140, no. 19: 1405-6, 1408, 1410, 1412, 1417-18, 1420, 1422 (Nov. 5, 1953).

Following a listing of the advantages and disadvantages of waste paper as a raw material, waste-paper stock preparation and the removal of light and heavy impurities are reviewed; losses caused by moisture and undesirable elements (contraries) in waste-paper supplies are discussed. The process of paperboard manufacture is outlined briefly. One rapidly growing problem in the use of waste paper is the inclusion of undesirable material, such as vegetable parchment, glassine paper, wax-coated and -laminated, wet-strength, bitumen-treated, oil- and greaseproof, heavily printed and varnished papers and boards, etc. Such waste falls into two categories. The first includes papers which do not readily disintegrate and, in consequence, are removed in the ragger; a far more serious consequence arises from papers and boards which break down sufficiently to pass through the process and cause blemishes in the finished product. Only by close contact and co-operation between the suppliers and consumers of waste paper can such difficulties successfully be overcome. 2 tables, 9 figures, and 3 references. E.S.

PERRY, HENRY J. Problems of paper stock reuse. Tech. Assoc. Graphic Arts, Proc. 5: 142-5; discussion: 145 (1953).

Problems which arise in the re-use of waste paper as a raw material for the paper industry are discussed; various substances found in the waste paper cause both operating problems and contamination of the finished paper. The problems concerned with technical progress, such as new inks, coatings, laminates, and impregnations, could be solved by segregation of this waste from re-usable papers; other problems arising from careless disposal of waste could be solved by forming a sound waste-paper salvage program. The income to be obtained from the sale of re-usable waste paper and saving in waste disposal is stressed as a sufficient incentive for forming such a program. R.A.S.

WET STRENGTH

NEWHARD, F. J. Retention of wet-strength resins by various types of pulps. Tappi 36, no. 12: 161-2A (December, 1953).

An investigation of quantitative determinations of the amounts of resin and catalyst retained by four different pulps (a bleached and unbleached sulfite, a bleached sulfate, and an unbleached groundwood) is described. Two resins, an anionic (I) and a cationic (II) urea-formaldehyde resin, and three

catalysts, alum, magnesium chloride, and mono-ammonium phosphate (III) were used. Resin and catalyst were added to the disintegrated pulp sample, the mixture was filtered, 250 ml. of the filtrate were evaporated at 95°C., the weight of the residue was determined, and the retention percentage calculated. An over-all average retention of 55% of (II) was found as compared with 26% for (I). (III) proved to be the superior catalyst of those used in this study. The resin-retaining ability for (II) with (III) was in the order: unbleached sulfite (78.5%), groundwood (71.4%), bleached sulfate (65.7%), and bleached sulfite (53.3%); for (I) with (III) the order was: unbleached sulfite (36.6%), bleached sulfite (33.3%), groundwood (25.6%), and bleached sulfate (22.2%). 4 tables. E.S.

WHITE WATER

THURN, A. [Moderator] How to re-use white water. Paper Trade J. 137, no. 23: 14-16 (Dec. 4, 1953); Tappi 36, no. 12: 132-4A (December, 1953).

At a joint meeting of Ohio TAPPI and the Miami Division of the American Pulp and Paper Mill Superintendents Association, a panel discussion on the re-use of white water was held under the headings: quality and control, dirt, slime, foam, sizing troubles, re-use, sprays, showers, filters preceding point of re-use, and centrifugal cleaners. E.S.

WILLOW

JAYME, GEORG, HARDERS-STEINHÄUSER, MARIANNE, and MOHRBERG, WILHELM. The suitability of different willow species for the manufacture of paper pulps. Holz Roh- u. Werkstoff 11, no. 7: 276-83 (July, 1953). [In German] *cf.* B.I.P.C. 24: 57.

Five different willow (I) species (*Salix humboldtiana, S. alba casteriana, S. pulchra, S. canariensis,* and *S. aglaja*), 5-15 years old, were studied. Anatomically the wood resembles poplarwood (II), including the abundant formation of tension wood. In contrast to the (II) samples investigated, starch-containing zones were detected in (I) which were always present in the last growth ring; the amount increases with tree height and reached in one case a maximum value of 80%. The absence of starch zones may possibly be connected with the felling time of the tree. The densities ranged from 0.369 to 0.454; the latter value was found in a sample with 95% tension wood. (I) vessels have wide porous bands which help to differentiate (I) and (II) pulps. The present (I) woods were more difficult to digest under standard sulfate cooking conditions than most (II) samples, so that in all cases a maximum temperature of 165°C. had to be used; in spite of this high temperature the pulps still contained splinters. Pulp yields ranged from 47.7 to 60.15% and, on the average, were a little lower than those from the best (II). The maximum value was obtained from a 15-year old *S. pulchra.* The yields decreased with tree height; they were higher in older woods and favorably influenced by the presence of tension wood. Variations in yield from the different species were distinctly noticeable. The strength properties of the resulting pulps were exceedingly high; the maximum breaking length amounted to 8546 m. and the maximum folding number to 3987 double folds. The internal tearing resistance was also higher than expected for the comparatively short average fiber length of 0.6 mm.; fineness and uniformity of fibers, thin fiber walls, ratio of fiber length to width, etc. may possibly account for this fact. The present results indicate that barked (I) wood is a suitable raw material for paper pulps. 9 tables, 7 figures, and 19 references. E.S.

WOMEN—EMPLOYMENT

NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY. Women's attitude to repetitive work. Paper Box Bag Maker: 182-4; 234-5 (October, November, 1953).

Results of a general study of repetitive work and its influence on the woman worker are presented. Observations show the existence of features common to many jobs; these are described and include diversity in the work (affecting aspects of freedom, constraint, security, and creativeness), attention and skill demanded by the work, efficiency, teamwork, and physical conditions. In the second article the field for further work and the more outstanding problems toward which the institute feels more study should be directed are discussed. R.A.S.

WOOD

JOSEPHSON, H. R., BURKS, G. F., TODD, A. S., and HAIR, D. Trends in pulpwood supplies in the United States. Paper Ind. 35, no. 9: 982-7 (December, 1953).

Pulpwood cut in the United States in 1951 reached a new high of 25,100,000 cords, with forests of the southern United States providing more than half of the output. The pulpwood requirement is estimated at present as 35 million cords and possibly 52 million cords by 1975. Ways suggested in which this increasing requirement can be met include expansion into southern Alaska and the Rocky Mountains for softwood timber (2 million cords/year estimated), use of potential softwood pulpwood in the form of logging and sawmill residues (13 million cords/year estimated), and an increase in the semichemical pulping of hardwoods (at present in the Northeast growth exceeds drain by more than 15 million cords annually). Pulpwood imports, composed almost entirely of softwoods from Canada, made up 8% of the pulpwood used in the United States in 1952. 4 tables and 9 figures. R.A.S.

VOGEL, JOHN H. Potential pulpwood requirements in 1960. Paper Ind. 35, no. 9: 988-91 (December, 1953).

The pulpwood requirement in the United States for 1960 is estimated at 31 million cords cut from domestic forests; of this amount the Northeast and Lake States are expected to produce 9 million cords, the Northwest, 5 million cords, and the South, the remaining 17 million cords. Whereas the potential large requirement of the industry in its continuing growth might normally cause a shortage, this threat is superseded by the work of the industry to increase its raw material base further by high-yield pulping processes, use of hardwood species, integration of forest industries, and utilization of logging and industrial waste. 3 tables. R.A.S.

WOOD—BUOYANCY

NYLINDER, PER. The distribution of specific gravity of wood in green condition and moisture in pine and spruce and its significance for Swedish log flotation. Holz Roh- u. Werkstoff 11, no. 9: 354-61 (September, 1953). [In German]

Log flotation plays an important role in Swedish forestry operations, particularly in the northern parts of the country; its extent varies from year to year and, during recent years, there has been a gradual decrease. In spite of measures taken to improve the buoyancy of wood, sinkage losses

amount to at least 1.5-2% of the total quantity of floated wood. A fundamental, long-range research program was initiated several years ago at Statens Skogsforskningsinstitut, and final results are not yet available. Partial results on the buoyancy of wood are presented in the present article. Data on seasonal distribution of moisture in heart- and sapwood of pine and spruce logs, variations in specific gravity of wood in green condition in different sections of the log (root, central, and top), and in logs of different diameters are given. For the buoyancy of wood, the average specific gravity in green condition is decisive; if it amounts to more than 1000 kg./cu. m., the log will sink. Hence, it should not amount to more than maximum 950 kg./cu. m. It can be favorably influenced by complete or partial debarking. The development of a method is suggested, according to which the probability of sinkage of logs may be calculated from certain readily determined factors, such as percentage of heartwood, position of wood block in trunk, etc. The probable loss in logs could then be estimated in comparison with the additional cost of barking and drying in the woods. 3 tables, 1 map, 26 figures, and 3 references. E.S.

WOOD—CHEMISTRY

THOMPSON, JAMES O., BECHER, JOSEPH J., and WISE, LOUIS E. A physicochemical study of a water-soluble polysaccharide from black spruce (*Picea mariana*). Tappi 36, no. 12: 541-3 (December, 1953).

A brief study has been made of some molecular properties of a cold water-soluble polysaccharide system from black sprucewood isolated under mild conditions and in a yield of 1.6%. Paper chromatography of the hydrolyzate showed the presence of galactose, arabinose, and small amounts of acidic material. The aqueous solution had a pH of 7.5, $[\alpha]_D$ −11°, and an intrinsic viscosity of 0.16. Osmotic pressure measurements on an acetate (D.S. about 2) in acetone indicated a number-average D.P. of about 330. Similar measurements in chloroform indicated molecular association in that solvent. Hot-water treatment of the fibrous residue which remained after the cold-water extraction was shown to remove appreciable amounts of carbohydrate material, including units of glucose, mannose, and xylose, in addition to galactose and arabinose. The pH of the extract was 4.5; it was considered probable that acid hydrolysis of cell wall material had occurred. 1 table, 2 figures, and 11 references. E.S.

WOOD—EXTRACTIVES

CORBETT, R. E., and WRIGHT, D. E. Heartwood extractives. Part I—The extractives of *Libocedrus bidwillii* and *Cupressus macrocarpa*. Chemistry & Industry no. 47: 1258-9 (Nov. 21, 1953).

Nootkatin, melting at 95.5-96°C. (0.2%) was isolated by means of ether from *C. macrocarpa*, and to a lesser extent (0.02%) by steam distillation. Carvacrol was also isolated by extraction. On the other hand, *L. bidwillii* yielded no tropolones, which is in harmony with the fact that the heartwood of the latter is often rotten. 13 references. L.E.W.

WOOD—MOISTURE

MILLETT, R. S. Drying rate of pulpwood in the woods and in the open. Pulp Paper Mag. Can. 54, no. 12: 166, 169-70 (November, 1953).

Two lots of pulpwood, collected in September and October, 1950, were alternately piled in the woods (in very light shade) and in the open at the

Ottawa Laboratory of Forest Products Laboratories of Canada. Results of tests on drying rate and moisture content are presented in tabular form and show that winter storage left the weight of the pulpwood unchanged, rapid moisture loss occurs during the warm seasons, and no advantage results from holding the wood through a second winter. 1 table and 3 figures. R.A.S.

WOOD—STRUCTURE

FREY-WYSSLING, ALBERT. The fine structure of compression lines in stressed wood. Holz Roh- u. Werkstoff 11, no. 7: 283-8 (July, 1953). [In German]

The submicroscopic fine structure of microscopic compression lines of cell walls is discussed with the aid of the microscopically visible compression structure of asbestos fibers. The differences in the deformation figures of macro- and microcompression lines in stressed wood are explained. 1 table, 16 figures, and 16 references. E.S.

X-RAY RESEARCH

KRATKY, O. Size and shape of micelles in regenerated cellulose. Holz Roh- u. Werkstoff 11, no. 7: 263-7 (July, 1953). [In German]

A review of x-ray and some electron-microscopic investigations and their results is presented. 8 figures and 31 references. E.S.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents are abstracted from the complete specifications.

BARKERS AND BARKING

EDWARDS, MILES L. Hydraulic log barking apparatus. Canadian patent 497,966. Filed Aug. 2, 1952. Issued Nov. 24, 1953. 11 claims. Assigned to Weyerhaeuser Timber Company.

Logs are debarked in one continuous operation by direct jets of water coming from one or more nozzles mounted in a barking chamber. This is identical with U. S. patent 2,630,848 (March 10, 1953); *cf.* B.I.P.C. 23: 594. 12 figures. W.B.W.

GUETTLER, HERBERT W. Short wood chain barker. Canadian patent 497,498. Filed Oct. 2, 1950. Issued Nov. 10, 1953. 7 claims.

This is the same as U. S. patent 2,647,548 (Aug. 4, 1953); *cf.* B.I.P.C. 24: 150. 5 figures. W.B.W.

HILLBOM, TOR O. Barking machine. U. S. patent 2,657,722. Filed March 22, 1949. Issued Nov. 3, 1953. 1 claim. [Cl. 144-208]

In this barking machine, movement is imparted to the logs piled upon each other in the container by the inclined bottom structure consisting of two groups of helically threaded rollers; the rollers within a group rotate in the same direction and the rollers of the two different groups rotate in opposite directions. This is the same as Canadian patent 487,523 (Oct. 28, 1952); *cf.* B.I.P.C. 23: 288. 2 figures. W.B.W.

MCCLAY, GORDON F. Water seal for log barking drums. U. S. patent 2,658,539. Filed May 15, 1951. Issued Nov. 10, 1953. 6 claims. Assigned to Ingersoll-Rand Company. [Cl. 144-208]

The drum-supporting rollers for a barking drum which operates with the lower portion of the drum in the washing tank are protected from contact with the water within the tank and the accompanying dirt and grime by placing them in sealed compartments. A sliding seal is made with flanges attached to the drum by a flexible strip of rubber or the like arranged in such a manner that pressure of the fluid forces the seal into contact with the drum. 7 figures. W.B.W.

PHILLIPS, LESTER E. Hand-guided motor-driven bark removing plow. U. S. patent 2,660,207. Filed Nov. 13, 1951. Issued Nov. 24, 1953. 7 claims. Assigned 50% to James C. Hamilton. [Cl. 144-208]

A portable log-peeling apparatus for redwood and similar large logs comprises a plow which is forced between the log and the bark and traction wheels attached to an electric motor contained in the body casing. 11 figures. W.B.W.

BEATER ADDITIVES

WALSH, ROBERT H., and POCKMAN, WILLIAM W. Method of incorporating polychloroprene in paper. U. S. patent 2,657,991. Filed Nov. 27, 1948. Issued Nov. 3, 1953. 1 claim. Assigned to E. I. du Pont de Nemours & Company. [Cl. 92-21]

A process for the incorporation of a polychloroprene latex comprises the following steps: The stabilized latex is diluted to a solids concentration of 4-10%, and aluminum sulfate is added to bring the charge on the latex particles to within 50 mv. of the charge on the pulp fibers; the latex is added to the pulp in the beater and the sheet formed from the coagulated material. This is the same as Canadian patent 472,952 (April 17, 1951); *cf.* B.I.P.C. 21: 742. W.B.W.

BOARD

KREIBAUM, OTTO. Method of and apparatus for the production of moulded materials and articles. Canadian patent 497,321. Filed Nov. 20, 1950. Issued Nov. 3, 1953. 4 claims.

Chips, shavings, shreds, etc. are treated with synthetic resin and fed into a board-forming compression chamber with heated walls. A reciprocating piston compresses the chips with the long axis of the chip transverse to the formed panel and, as more material is compressed by the piston, the panel is extruded from between the forming plates. A method is also claimed for the incorporation of channels or ducts parallel to the long axis of the board. 5 figures. W.B.W.

SEARS, JOSEPH N. Structural board from wood waste, extracted flour of soya beans and melamine-urea formaldehyde resin. U. S. patent 2,658,878. Filed Oct. 10, 1949. Issued Nov. 10, 1953. 3 claims. Assigned to L. J. Carr & Co. [Cl. 260-6]

Wood waste (86-90%) is reduced to a uniform particle size, the size depending on the characteristics desired in the final product, and mixed with less than 10% of solvent-extracted soybean flour, 1-1.5% melamine-urea formaldhyde resin, fire-retarding agents (ammoniun phosphate and ammonium sulfate), a humectant (ethylene glycol), and a fungicide (pentachlorophenate), then formed into boards with application of heat and pressure. W.B.W.

BOARD, FIREPROOF

SULLIVAN, WILLIAM F., and PANIK, IRENE M. Solution for treatment of fibrous cellulosic materials. U. S. patent 2,658,000. Filed May 31, 1951. Issued Nov. 3, 1953. 5 claims. Assigned to National Lead Company. [Cl. 106-15]

A solution for the treatment of fibrous cellulosic materials (such as cotton, cardboard, paper, viscose rayon, cellulose acetate, etc.) imparts fire resistance

and likewise resistance to afterglow. The material is thoroughly soaked with a solution containing titanium chloride acetate and antimony chloride, dewatered, and partially air dried; the gelatinized solution is alkalized by treatment with ammonium hydroxide or sodium carbonate solution and redried. Fabrics treated with the above process retain flame and glow resistance after repeated washing. W.B.W.

BOARD SPECIALTIES

FERGUSON, KENNETH C. Corner lock for corrugated fiberboard boxes. U. S. patent 2,660,364. Filed May 12, 1951. Issued Nov. 24, 1953. 2 claims. Assigned to Anderson Box Company. [Cl. 229-35]

Locking tongues on each side wall engage a corresponding opening with locking flap in the end wall to complete an easily assembled rigid box structure. 5 figures. W.B.W.

FIELD, JACOB M. Form for textile material or the like. U. S. patent 2,660,298. Filed Sept. 3, 1947. Issued Nov. 24, 1953. 6 claims. [Cl. 206-50]

A rectangular board-shaped form to serve as a core for winding textile materials is folded from a paperboard blank and contains a reinforcing member of folded paperboard to prevent crushing of the form. 5 figures. W.B.W.

HALL, MAYNARD G. Bottle carrier. U. S. patent 2,658,659. Filed April 26, 1950. Issued Nov. 10, 1953. 4 claims. Assigned to Empire Box Corporation. [Cl. 229-28]

A preformed collapsible bottle carrier of cardboard or like material contains a medial partition with a detachable wire handle. 8 figures. W.B.W.

MCELWEE, JOSEPH A. Handled carton. U. S. patent 2,659,524. Filed April 11, 1951. Issued Nov. 17, 1953. 2 claims. Assigned to The Ohio Boxboard Company. [Cl. 229-16]

This bottle carrier contains a handle which is an extension of a side wall with the sides, ends, and top of the carton completely enclosed and an access panel provided in the top panel. 16 figures. W.B.W.

PAIGE, RICHARD E., and RAFAAT, MANSOOR. Combination shiping carton and floor stand. U. S. patent 2,659,483. Filed Dec. 5, 1951. Issued Nov. 17, 1953. 4 claims. Rafaat's interest assigned to Paige. [Cl. 206-44]

Interlocking folded members are expanded for bracing the carton after the packaged goods are removed and the carton is converted into a floor stand for the display of the goods. Appropriate display panels are also included in the carton and a simple refolding of the carton base accommodates the panels and provides for the display rack utilizing the carton as the base. 12 figures. W.B.W.

RUECKERT, DEAN E. Packaging food products. Canadian patent 497,464. Filed April 20, 1946. Issued Nov. 3, 1953. 5 claims. Assigned to Swift & Company.

A package for frankfurters, sausages, and the like incorporates a piece of

solid sulfite or bleached manila-lined board as a backing sheet. This is identical with U. S. patent 2,470,579 (May 17, 1949); *cf.* B.I.P.C. 20: 445. 3 figures. W.B.W.

SWAN, WILLIAM H. Display box. U. S. patent 2,659,490. Filed Aug. 14, 1950. Issued Nov. 17, 1953. 3 claims. [Cl. 211-69]

Cigarettes or similar items are displayed in an open-top box and held in vertically aligned position by perforated horizontal members with an arched false bottom supporting the articles. 5 figures. W.B.W.

TRICKETT, LAWRENCE G., JR., and DEEM, CLARK O. Collapsible box having interlocking end walls. U. S. patent 2,660,363. Filed April 11, 1949. Issued Nov. 24, 1953. 2 claims. Assigned to Crook Paper Box Company. [Cl. 229-35]

An open-top box suitable for use as a liner for large, rigid fruit-delivery boxes is formed from a rectangular cardboard blank with the hand-hold flap in the overlapped ends acting as the locking device. 5 figures. W.B.W.

BOARD TESTING—PHYSICAL

SKALMUSKY, MARVIN F., ROOT, CARLETON H., and MCKEE, ROBERT C. Method and apparatus for testing sheet materials. Canadian patent 497,607. Filed July 31, 1950. Issued Nov. 10, 1953. 1 claim. Assigned to The Institute of Paper Chemistry.

This is identical with U. S. patent 2,645,937 (July 21, 1953); *cf.* B.I.P.C. 24: 67. 8 figures. W.B.W.

BONDED FIBER WEBS

BATTISTA, ORLANDO A. Cockled fibrous product of the nonwoven fabric type and method of making it. U. S. patent 2,647,297. Filed July 10, 1948. Issued Aug. 4, 1953. 9 claims. Assigned to American Viscose Corporation. [Cl. 28-78]

A cockled or crinkled product made from a web of wood pulp, cotton, synthetic fiber, or the like is produced by mixing fibers of cellulose esters in an amount of not less than 55% by weight with the web. Heat is applied to bond the cellulose ester fibers to the others, and the web is then passed through an aqueous saponifying medium, washed free of saponifying agent, and dried without tension to obtain the creped effect, which is permanent in the sheet. 4 figures. W.B.W.

BROKE

VER DOOT, HENRY, JR. Method of removing dry paper trim. U. S. patent 2,658,427. Filed Aug. 18, 1949. Issued Nov. 10, 1953. 4 claims. Assigned to Fort Howard Paper Company. [Cl. 92-38]

A fine stream of water is directed at the tissue trim at the point where it is doctored from the Yankee. This weights the strip sufficiently and neutralizes electrical charges so that the trim does not become entangled in the machinery or the finished web. 2 figures. W.B.W.

DISPENSING CONTAINERS

HENDERSON, WILLIAM H. Adjustable dispensing closure for containers. U. S. patent 2,658,658. Filed Nov. 13, 1948. Issued Nov. 10, 1953. 5 claims. [Cl. 229-7]

The dispensing flap of a container for powdered soaps and the like may be adjusted by means of notches in the flap to form a pouring spout of the desired size. 5 figures. W.B.W.

NORDEN, JESSE. Closure top. U. S. patent 2,657,848. Filed April 19, 1950. Issued Nov. 3, 1953. 2 claims. [Cl. 229-7]

In a fibrous container for fluid materials (e.g., milk cartons) with a flat top structure, the closure is formed by a flap of the top cover which is adhesively secured to the top over half of the area and free to fold back along a medial score line. A depressed area is formed into the flap which comprises a plug which tightly seals the pouring opening of the carton. 5 figures. W.B.W.

FOLDING BOXES

AQUINO, SALVATORE A., and WELSHENBACH, CHARLES D. Paperboard box of the suitcase type. U. S. patent 2,658,661. Filed March 8, 1950. Issued Nov. 10, 1953. 4 claims. Assigned to The Hinde & Dauch Paper Company. [Cl. 229-36]

A paperboard container for garments has a corner-locking construction wherein a tongue is passed through a slot in the adjacent wall, then folded back along the inside and held in place by the telescoped bottom section. The handle is formed as an integral part of the blank. 5 figures. W.B.W.

BUTTERY, KENNETH T. Automatic setup carton. U. S. patent 2,659,526. Filed May 19, 1951. Issued Nov. 17, 1953. 7 claims. Assigned to Sutherland Paper Company. [Cl. 229-39]

A carton of the automatic erecting type has bottom parts which are interlocked in overlapping relation. This is similar to Canadian patent 487,673 (Oct. 28, 1952); *cf.* B.I.P.C. 23: 292. 7 figures. W.B.W.

HENNESSEY, RUSSELL J. Reclosable carton. U. S. patent 2,658,664. Filed Jan. 2, 1951. Issued Nov. 10, 1953. 2 claims. Assigned to Waldorf Paper Products Company. [Cl. 229-51]

A fracture line is provided around and near the upper edge of a paperboard carton to allow removal of the top which is then telescoped over the body of the carton to provide a tight closure. 4 figures. W.B.W.

KELLER, CLIFFORD M. Folding box. U. S. patent 2,658,660. Filed April 28, 1948. Issued Nov. 10, 1953. 3 claims. [Cl. 229-36]

Interlocking tabs with corresponding slits are employed to hold the erected box in the closed position. 13 figures. W.B.W.

METZGER, HENRY L. Collapsible box. U. S. patent 2,657,851. Filed Dec. 9, 1949. Issued Nov. 3, 1953. 1 claim. Assigned to Fort Orange Paper Company. [Cl. 229-38]

This box is formed from a single scored paperboard blank with an automatic-type bottom. The box is preglued and shipped and stored in the flattened condition. 7 figures. W.B.W.

PAULSEN, NEAL I. Moistureproof container. U. S. patent 2,658,662. Filed Aug. 6, 1947. Issued Nov. 10, 1953. 5 claims. Assigned to Reynolds Metals Company. [Cl. 229-37]

A moistureproof container-forming material is made by laminating two or more layers of metal foil with a heat-sealable material such as waxed paper. The overlapping flap construction of the end closures is likewise heat sealed to form a moisture- and liquidtight carton. 19 figures. W.B.W.

TYRSECK, WALTER J. Partitioned carton. U. S. patent 2,660,361. Filed Aug. 8, 1950. Issued Nov. 24, 1953. 3 claims. Assigned to Robertson Paper Box Company Incorporated. [Cl. 229-28]

Cross partitions and a longitudinal medial partition are formed as a part of the same blank as the outer carton. After partial assembly and gluing, the carton may be stored in the flattened condition and erected by pressing the ends toward each other. 8 figures. W.B.W.

WARD, ROBERT C. Carton construction. U. S. patent 2,657,792. Filed Sept. 26, 1951. Issued Nov. 3, 1953. 1 claim. [Cl. 206-7]

This carton contains a garment-hanger panel formed as an integral part of the carton blank, the point of attachment of the panel being sufficiently narrow to accommodate the collar of a coat. A front panel with locking tab provides for closure of the carton, and slots adjacent to the upper edge form a convenient handle. 5 figures. W.B.W.

WIKSTROM, OSKAR W. Polygonal box. U. S. patent 2,659,525. Filed Feb. 17, 1949. Issued Nov. 17, 1953. 1 claim. Assigned to United States Automatic Box Machinery Co., Inc. [Cl. 229-33]

A box for packaging waxed paper, foil, etc. contains six or more sides and may be set up by a Brightwood machine from a one-piece paperboard blank. 6 figures. W.B.W.

GUMS AND RESINS

MOE, OWEN A. Carboxyalkyl ether salts of carbohydrate gums. Canadian patent 497,393. Filed May 20, 1946. Issued Nov. 3, 1953. 8 claims. Assigned to General Mills, Inc.

This is very similar to Canadian patent 497,392 (Nov. 3, 1953); *cf.* abstract below. W.B.W.

MOE, OWEN A. Carboxyalkyl ethers of carbohydrate gums. Canadian patent 497,392. Filed Oct. 10, 1945. Issued Nov. 3, 1953. 4 claims. Assigned to General Mills, Inc.

The carboxyalkyl ether of a carbohydrate gum (karaya gum, locust-bean gum, etc.) is produced by dispersal of the gum in sodium hydroxide solution, heating, and then treating the reaction mixture with chloracetic acid supplemented by stirring. The product is precipitated from solution with methanol and washed with methanol, then dried and ground. The resulting material is readily soluble in water and exhibits a viscosity comparable to or higher than the gum itself. W.B.W.

INORGANIC PAPER

LABINO, DOMINICK. Method for making glass paper. U. S. patent 2,658,848. Filed Nov. 17, 1951. Issued Nov. 10, 1953. 2 claims. Assigned to Glass Fibers, Inc. [Cl. 154-101]

Glass fibers from 0.04 to 1 μ in diameter are formed into a pair of webs on wire belts which are brought together in the presence of an acidic wetting liquid to produce better fiber bonding. Glass paper is especially suitable for

applications where heat or dielectric properties limit the use of paper from organic fibers. 3 figures. W.B.W.

INTERIOR PACKING

D'ESPOSITO, JULIAN C. Bicycle wheel brace. U. S. patent 2,660,297. Filed Feb. 27, 1951. Issued Nov. 24, 1953. 11 claims. Assigned to Container Corporation of America. [Cl. 206-46]

A pad comprising multiple panels of corrugated board is formed as an integral part of a positioning filler in a bicycle carton. The filler is assembled without need of adhesive or other fastening means, and transverse thrust of the bicycle is transmitted from the pad to the corner of the carton. 6 figures. W.B.W.

DUNNING, ROBERT M. Roll support. U. S. patent 2,660,296. Filed Feb. 21, 1951. Issued Nov. 24, 1953. 7 claims. Assigned to Waldorf Paper Products Company. [Cl. 206-46]

Interlocking arcuate-shaped slits in a paperboard pad form tabs which are inserted into the end of a roll of tape, etc. by bending the pad, then engaging the tabs in the core by bringing the pad back to a single plane. 3 figures. W.B.W.

JENNER, GEORGE T. Containers for a number of articles. Canadian patent 497,724. Filed April 11, 1950. Issued Nov. 17, 1953. 7 claims. Assigned to The British Drug Houses Limited.

Into a cardboard container of cylindrical or other cross section for packaging fragile articles such as glass ampoules, compartments for the individual items formed by a folded insert in zig-zag form are inserted. 6 figures. W.B.W.

MACHINERY—BOARD MACHINES

GOLDSMITH, PHILIP H. Adjustable cylinder papermaking machine. U. S. patent 2,658,428. Filed Nov. 17, 1949. Issued Nov. 10, 1953. 19 claims. Assigned to The Pusey & Jones Corporation. [Cl. 92-43]

A cylinder machine comprises a vat within which is located an inner circle of flexible sheet metal supported by the heads of the vat and adjustable as to position and spacing relative to the cylinder. 33 figures. W.B.W.

MALKIN, BERNARD A. Paperboard forming machine. U. S. patent 2,658,429. Filed Jan. 7, 1950. Issued Nov. 10, 1953. 8 claims. [Cl. 92-43]

An improved web-forming surface (apron) is claimed for a cylinder mold which will form a web with good formation from thicker stock than ordinarily used. The mold may be used as a replacement unit and installed in a vat or used without a vat; likewise suction boxes inside the cylinder may or may not be used as desired. 9 figures. W.B.W.

MACHINERY—CHIPPERS

JOHNSON, CHARLES A. Knife blade mounting for chippers. U. S. patent 2,657,723. Filed Oct. 20, 1950. Issued Nov. 3, 1953. 4 claims. [Cl. 144-219]

The chipper knives are held in the face of the chipper disk by wedge-shaped members which fit into correspondingly shaped recesses in the working face of the disk. With this clamping device, the necessity of slotting or grooving the knife blade is eliminated and blades of varying thicknesses may be accommodated by changing the clamping wedge. 6 figures. W.B.W.

MACHINERY—CONVERTING MACHINERY

CLAFF, CLARENCE L., and MOELLER, CARL A. Box setting-up machine. U. S. patent 2,658,433. Filed Feb. 26, 1947. Issued Nov. 10, 1953. 2 claims. Assigned to Norfolk Paper Company, Inc. [Cl. 93-36.3]

A semiautomatic machine for setting up boxes embodies pressing members actuated through a manually operated control mechanism. This is the same as Canadian patent 483,951 (June 10, 1952); *cf.* B.I.P.C. 22: 960. 11 figures. W.B.W.

DUNNING, ROBERT M. Apparatus for folding wrappers. U. S. patent 2,660,099. Filed Oct. 30, 1947. Issued Nov. 24, 1953. 5 claims. Assigned to Waldorf Paper Products Company. [Cl. 93-12]

A liner bag of a transparent film coated with wax, resin mixture, etc. for packaging cheese and similar products in a box is formed over an expansible mandrel for easy withdrawal of the mandrel from the finished unit. 14 figures. W.B.W.

FAHEY, RICHARD J. Carton setup machine. U. S. patent 2,659,279. Filed June 12, 1948. Issued Nov. 17, 1953. 23 claims. Assigned to General Package Corporation. [Cl. 93-37]

Knock-down blanks for cellular paperboard egg cartons are advanced from a supply magazine by a positive feed mechanism through a forming chute where the partitions are erected and inserted into the slits in the carton bottom. 15 figures. W.B.W.

GEFFROY, GEORGES. Carton forming machine. Canadian patent 497,771. Filed May 5, 1950. Issued Nov. 17, 1953. 1 claim. Assigned to La Cellophane.

A machine for making open-top boxes with cellophane liner for food products is claimed. This is the same as U. S. patent 2,643,592 (June 30, 1953); *cf.* B.I.P.C. 23: 936. 7 figures. W.B.W.

GREY, VICTOR A. Banding machine. Canadian patent 497,766. Filed Jan. 20, 1947. Issued Nov. 17, 1953. 10 claims. Assigned to Kartridg-Pak Machine Co.

A machine is adapted for automatic banding of link sausages between two continuous paper strips. This is identical with U. S. patent 2,578,799 (Dec. 18, 1951); *cf.* B.I.P.C. 22: 457-8. 14 figures. W.B.W.

MACHINERY—DECURLING MACHINERY

BAUMGARTNER, JOHN R. Paper decurling apparatus. U. S. patent 2,658,432. Filed Feb. 1, 1951. Issued Nov. 10, 1953. 2 claims. [Cl. 92-70]

Paper is passed from a supply roll over a series of heated ironer rolls and idler rolls, the relationship of the ironer rolls being adjustable with respect

to the idler rolls so that the reverse curl imparted to the web may be adjusted in accordance with the amount of curl initially present in the paper. 5 figures. W.B.W.

MACHINERY—DRYERS

BENNETT, ANDREW E. Sheet moisture drying machine control mechanism. U. S. patent 2,659,987. Filed Dec. 13, 1952. Issued Nov. 24, 1953. 17 claims. Assigned to Mason-Neilan Regulator Company. [Cl. 34-48]

The indicating roll for this control mechanism is located at or near the end of the drier section and is supplied with steam through a line separate from that of the remainder of the section. Changes in the surface temperature of the indicator roll caused by changing moisture content of the web are picked up by the sensing element contacting the roll surface and cause the control elements to regulate steam supplied to the drier rolls. 3 figures. W.B.W.

DUNGLER, JULIEN. Conveying means for webs or sheets. Canadian patent 497,313. Filed March 14, 1949. Issued Nov. 3, 1953. 10 claims.

A means of supporting a web of paper or cloth in the event of a break while passing through a tunnel drier is provided in a series of wires, rods, cables, or the like whose axis runs parallel with the web and which are spaced a short distance away from (and normally out of contact with) the web. The rotating rolls that support the web under normal operating conditions are grooved to provide space for the wires, rods, etc. 7 figures. W.B.W.

MACHINERY—FOLDING MACHINE

PETERSON, ERIC W. Sheet assembling and folding machine. Canadian patent 497,482. Filed Feb. 23, 1949. Issued Nov. 3, 1953. 13 claims. Assigned to Roy W. LeMoyne.

The machine makes the necessary folds in the master sheet and interleaves the carbon sheet into one end section of a duplicator master set which comprises a three-fold sheet with a special carbon paper. 7 figures. W.B.W.

MACHINERY—GRINDERS

KEON, JAMES J. Feeding mechanism for wood pulp grinders. U. S. patent 2,659,537. Filed Oct. 27, 1950. Issued Nov. 17, 1953. 5 claims. Assigned to The William Kennedy & Sons Limited. [Cl. 241-222]

Pulpwood logs are fed from the bottom of a hopper by an endless conveyor to a reciprocating dolly which carries the log into the grinder in proper position and tilts sideways to unload the log within the grinder chamber. Limit switches prevent actuation of the mechanism if insufficient space is available in the grinder chamber. 4 figures. W.B.W.

MACHINERY—PACKAGING MACHINERY

BOYCE, JOHN, and HAYES, DUDLEY W. Machine for closing cartons. U. S. patent 2,660,012. Filed Dec. 6, 1950. Issued Nov. 24, 1953. 32 claims. Assigned to Food Machinery and Chemical Corporation. [Cl. 53-147]

Cartons of the type generally used for packaging frozen foods, provided

with a locking tab attached to the front flap of the hinged cover and tabs on the side flaps of the cover, are closed by this machine. As the cover is moved into closed position by plows, a device associated with the conveyor deforms the side walls sufficiently to ensure engagement of the tabs in the slits. 19 figures. W.B.W.

MACHINERY—PAPER MACHINE—CYLINDER MOLD

STEVENS, SAMUEL S. Papermaking machine. U. S. patent 2,658,430. Filed Jan. 28, 1950. Issued Nov. 10, 1953. 14 claims. [Cl. 92-43]

A papermaking machine is claimed which comprises a wire-covered rotating cylinder upon which the web is formed. Stock is conducted to the web-forming area of the mold through a duct which may be adjusted over an arcuate path to vary the cross-sectional area of the slice. Vacuum may be applied to the area beneath the slice through suction boxes mounted within the roll and connected through hollow trunions. 5 figures. W.B.W.

STEVENS, SAMUEL S. Papermaking machine. U. S. patent 2,658,431. Filed Dec. 5, 1950. Issued Nov. 10, 1953. 5 claims. [Cl. 92-43]

This is very similar to U. S. patent 2,658,430 (Nov. 10, 1953; *cf.* abstract above) except that the roll is pivoted to change the relationship of the slice to the roll surface. 3 figures. W.B.W.

MACHINERY—PASTING MACHINE

BLEDSOE, OPHARD. Apparatus for applying paste to wallpaper. U. S. patent 2,658,471. Filed April 7, 1950. Issued Nov. 10, 1953. 11 claims. [Cl. 118-33]

A uniform coating of paste is applied to the under side of a strip of wallpaper by passing the web over a fabric-covered roll buoyantly supported on paste in a trough. The supply of paste in the trough is replenished as required by means of a conduit connected to a reservoir. 7 figures. W.B.W.

TAGGART, ROBERT E. Glue-applying apparatus for packaging machines. U. S. patent 2,659,342. Filed Aug. 18, 1951. Issued Nov. 17, 1953. 4 claims. Assigned to Lynch Corporation. [Cl. 118-261]

Glue is applied to the end flaps of packages by a wheel and associated glue pot, which assembly may be easily detached from the machine for cleaning. Sliding guides make the entire apparatus adjustable for packages of various sizes. 10 figures. W.B.W.

TAGGART, ROBERT E. Gluing assembly for packaging machines. U. S. patent 2,659,341. Filed Aug. 18, 1951. Issued Nov. 17, 1953. 11 claims. Assigned to Lynch Corporation. [Cl. 118-205]

The glue is transferred by centrifugal force from the wheel in the glue pot to the glue-applicator belt, with adjustable scraper blades controlling the amount of glue transferred to the belt. The glue pot may readily be removed from the machine for cleaning purposes. 16 figures. W.B.W.

WILLIAMSON, WILLIAM R. Glue dispensing assembly for envelope handling machines. U. S. patent 2,659,280. Filed May 22, 1950. Issued Nov. 17, 1953. 4 claims. [Cl. 93-68]

Gumming rolls are frictionally rotated against the gum-applying drum by the friction wheel at the end of the drum. A uniform quantity of adhesive is thus transferred to the rolls and subsequently to the envelope. 7 figures. W.B.W.

ZINN, JULIUS A., JR. Apparatus for applying hot melt adhesive to carton blanks. U. S. patent 2,659,340. Filed June 20, 1950. Issued Nov. 17, 1953. 2 claims. [Cl. 118-202]

A pair of heated intaglio rolls apply hot-melt adhesive simultaneously to both sides of a carton blank in predetermined areas; the blank cools the adhesive sufficiently upon contact to lift the adhesive from the roll. Rotation is adjusted to a speed sufficient to hold the adhesive in the intaglio pattern on the rolls. 15 figures. W.B.W.

MACHINERY—PRESSES

BOUTWELL, WILLIAM R. Waste carton crusher. U. S. patent 2,660,110. Filed Nov. 16, 1951. Issued Nov. 24, 1953. 3 claims. [Cl. 100-295]

A saucer-shaped crushing weight made from a convex steel plate and padded to protect the floor upon which it is used is hoisted above the cartons by means of a boom and winch, then dropped by disengaging the winch pawl. 3 figures. W.B.W.

MACHINERY—PULPERS

COWLES, EDWIN. Machine for pulping paper stock. U. S. patent 2,658,426. Filed July 1, 1952. Issued Nov. 10, 1953. 5 claims. Assigned to The Cowles Company. [Cl. 92-26]

The tank of this pulper is very roughly of a tear-drop shape with the impeller mounted on the flat wall adjacent the apex. Good circulation of stock and defibering is claimed with a small impeller and a low power consumption. Vanes in the tank near the impeller prevent dead spots in the circulation and a grating in the bottom of the tank provides for continuous removal of defibered stock. 4 figures. W.B.W.

MACHINERY—SAWS

QUIRKE, ALAN T. Power chain saws. Canadian patent 497,515. Filed March 12, 1948. Issued Nov. 10, 1953. 9 claims.

The idler wheel of a power chain saw is quickly releasable to slacken the saw chain, thus providing for easy removal of the saw from the cut. 10 figures. W.B.W.

MACHINERY—SHEET-FEEDING MECHANISM

BACKHOUSE, HEADLEY T. Sheet-feeding apparatus. Canadian patent 497,835. Filed Jan. 18, 1947. Issued Nov. 24, 1953. 10 claims.

The stack of paper sheets on the pile board is supported by cross bars which engage chains at either end, the chains providing means of elevating the board to keep the top of the stack at approximately constant height. An auxiliary elevating device is provided near the upper limit of board travel to facilitate loading a new stack beneath the almost-exhausted pile, thus providing for continuous operation. 8 figures. W.B.W.

MACHINERY—SPREADERS

ROBERTSON, JOHN D. Expander and contractor rolls. Canadian patent 497,330. Filed Jan. 15, 1951. Issued Nov. 3, 1953. 9 claims.

A roll for spreading traveling webs of fabric, paper, and the like, and for eliminating wrinkles therein may also, in the case of creped papers, be employed to contract the sheet. The roll is straight on each end, and a curved section in the center of the roll may be adjusted to provide for a greater or lesser deformation and, consequently, a varying degree of stretch imparted to the web. Relatively soft rubber suitable to withstand flexing of the roll is employed to cover the central portion, and harder rubber capable of wear resistance is used on the straight end sections. 9 figures. W.B.W.

MACHINERY—SULFUR BURNERS

BRAUN, RICHARD T. Sulfur burners. Canadian patent 497,615. Filed Sept. 15, 1949. Issued Nov. 10, 1953. 6 claims. Assigned to Mathieson Chemical Corporation.

The concentration of impurities in molten sulfur prior to burning is kept to a minimum by constantly withdrawing a small amount of molten material from the surface where the impurities have been concentrated by bubbling air, purifying by suitable means, and returning the purified sulfur to the volatilization chamber. Vapor-phase sulfur free of impurities is carried by the air stream from the volatilization chamber to the oxidation chamber. 4 figures. W.B.W.

MACHINERY—TUBE MAKING MACHINE

HUSSNIGG, AUGUST C. Apparatus for the compression of the grooves of helically grooved tubes and hoses. U. S. patent 2,657,617. Filed Aug. 5, 1947. Issued Nov. 3, 1953. 2 claims. [Cl. 93-77]

A machine is claimed for helically grooving smooth continuous hose and tubing wound from strip material; the machine comprises a combination of a rotatable grooving and retarding means. 2 figures. W.B.W.

MACHINERY—VORTEX-TYPE DIRT SEPARATOR

BAXTER, JOSEPH, JR. Paper machinery. Canadian patent 497,873. Filed Feb. 2, 1951. Issued Nov. 24, 1953. 15 claims. Assigned to The Black-Clawson Company.

This is the same as U. S. patent 2,645,347 (July 14, 1953); *cf.* B.I.P.C. 24: 76. 3 figures. W.B.W.

STAEGE, STEPHEN A., and GIBSON, ALBERT G. Paper machinery. Canadian patent 497,874. Filed Feb. 2, 1951. Issued Nov. 24, 1953. 9 claims. Assigned to The Black-Clawson Company.

This is the same as U. S. patent 2,645,346 (July 14, 1953); *cf.* B.I.P.C. 24: 76. 3 figures. W.B.W.

MACHINERY—WIRES

JOHNSON, HENRY. Fourdrinier wire having reinforced coated marginal portions. U. S. patent 2,659,958. Filed Aug. 30, 1952. Issued Nov. 24, 1953. 2 claims. [Cl. 28-80]

The reinforcement of the edges of a Fourdrinier wire with a plastic material is claimed to increase the life of the wire. The plastic material is ap-

plied as strips on either side of the wire and bonded to it by application of heat and pressure. An irregular inner edge of the reinforcement is claimed to prevent cracking at the junction of the wire and the reinforcing strip. 2 figures. W.B.W.

MATERIALS HANDLING

JOHANSSON, KARL L. B. Log classifying machine. U. S. patent 2,657,785. Filed Oct. 3, 1951. Issued Nov. 3, 1953. 6 claims. Assigned part interest to Gunnar Gideon Edstrom. [Cl. 198-38]

The machine feeds logs individually by conveyor to suspended carriages which travel from the loading point over a series of stations to which the logs are delivered. As each log is loaded into the carriage, the latch mechanism controlling the bottom is set to deliver the log to any of the stations in the sorting system. Grading of the logs and setting of the delivery mechanism is performed by the operator. 2 figures. W.B.W.

RADER, ARLIE B. Article transfer for carton taping machines. U. S. patent 2,659,474. Filed April 25, 1950. Issued Nov. 17, 1953. 2 claims. [Cl. 198-27]

Filled cartons are taped in two operations with a weighing device employed as a transfer means from the first to the second taping station. Underweight cartons are rejected before passing through the second taping device. 3 figures. W.B.W.

VOGT, CLARENCE W. Apparatus for and method of combining enwrapments. U. S. patent 2,660,098. Filed Sept. 14, 1948. Issued Nov. 24, 1953. 7 claims. [Cl. 93-1]

A machine and method for assembling bags into a series or chain are claimed. The bags made from paper, etc. are attached to tapes coated with adhesive (preferably thermoplastic) for convenience in handling and filling operations. At the conclusion of the filling operations, the tape may be released from the bag or it may be folded over the bag opening and employed as a seal. 11 figures. W.B.W.

WILSKE, JULIUS E., MCCORMICK, FRANCIS A., and POLITSCH, VERNEY G. Apparatus for conveying and stacking box blanks. U. S. patent 2,660,432. Filed Sept. 4, 1948. Issued Nov. 24, 1953. 7 claims. Assigned to Owens-Illinois Glass Company. [Cl. 271-68]

This device is intended for use in conjunction with a printer-slotter or the like and comprises adjustable conveyors for transporting and stacking the blanks as delivered from the machine. Automatic control is provided for elevation of the stacking conveyor as the height of the pile of blanks increases and the speed of the conveyors may likewise be reduced to allow for lowering the conveyor to start a new stack. 11 figures. W.B.W.

PACKAGING

BARNES, MARSHALL C. Method of packaging empty bags. U. S. patent 2,659,187. Filed April 8, 1950. Issued Nov. 17, 1953. 5 claims. Assigned to Bemis Bro. Bag Company. [Cl. 53-7]

A method of assembling paper or fabric bags into bales or pallet loads is described. This is identical with Canadian patent 492,001 (April 14, 1953); *cf.* B.I.P.C. 23: 774. 15 figures. W.B.W.

PAULS, THERON F. Packaging explosives. U. S. patent 2,660,300. Filed June 17, 1950. Issued Nov. 24, 1953. 2 claims. Assigned to Olin Industries, Inc. [Cl. 206-65]

Blasting caps are first arranged in paperboard trays with the open ends of the caps upward, and the trays are then placed in pairs in the carton with the open ends of the caps facing a cushioning pad of sufficient resilience to prevent loss of material from the cap. 5 figures. W.B.W.

SCHILLING, PAUL A. Covered tray. U. S. patent 2,660,362. Filed March 8, 1948. Issued Nov. 24, 1953. 2 claims. Assigned to Waldorf Paper Products Company. [Cl. 229-35]

A tray-type carton with a transparent overwrap for packaging foodstuffs and the like is claimed wherein the wrapping sheet is heat sealed at the bottom edges and around the top edges of the carton to require a minimum of wrapping material. 9 figures. W.B.W.

VAN WIRT, ALFRED E. Wall-covering package. U. S. patent 2,660,299. Filed Oct. 8, 1952. Issued Nov. 24, 1953. 1 claim. Assigned to Imperial Paper and Color Corporation. [Cl. 206-59]

Rolls of wallpaper or the like with trimmed edges are covered with an outer wrapper; a disk of paperboard is applied at either end of the roll inside the overlapped ends of the wrapper which are turned back into a bead. This bead confines the cardboard disk and stiffens the edge of the package. 4 figures. W.B.W.

PACKAGING—OPENERS

REESE, GARLAND W. Fiber container. U. S. patent 2,658,663. Filed Feb. 18, 1948. Issued Nov. 10, 1953. 5 claims. Assigned to American Can Company. [Cl. 229-51]

Metal-end units are crimped to the wax-coated fibrous body material of a container for frozen foods and the like in such manner that the end may be removed from the carton without tools of any kind. A tear strip opening is formed in one corner of the fiber body thereby exposing a corner of the metallic end closure to permit easy stripping of the latter from the fiber body. 8 figures. W.B.W.

TRAUTSCHOLD, REGINALD. Apparatus for opening and emptying bags. U. S. patent 2,660,324. Filed Oct. 26, 1949. Issued Nov. 24, 1953. 13 claims. Assigned to St. Regis Paper Company. [Cl. 214-305]

Paper bags containing flour, sugar, or the like are carried by conveyor past a rotary slitter knife and are at the same time impaled upon a spike projecting over the hopper opening. Following bags force the impaled bag off the end of the conveyor, where it is held on the spike in position so that the contents may empty from the slitted side into the hopper, and the bag is forced along the spike to a point where a rip knife and a spiked wheel remove and eject it from the machine. 4 figures. W.B.W.

PAPER—COATED

FISHER, HARRY C., and SOOY, BRAINARD E. Method for imprinting coatings on paper and paper board. Canadian patent 497,570. Filed Aug. 29, 1951. Issued Nov. 10, 1953. 6 claims. Assigned to Consolidated Water Power & Paper Company.

Paper or board to be coated is first plasticized with a water-soluble agent (such as polyvinyl alcohol, converted starches up to 5% solids, or carboxymethylcellulose) applied on the breaker calender stack. A mineral coating mixture is next flowed onto the web, then doctored off to leave a mere film on the web, after which the web is passed between the imprinting rolls where a mineral coating containing 50-55% solids is metered through gate rolls to the imprinting roll. The thickness of the finished coating is in the order of one thousandth of an inch and the web, after drying and calendering, is claimed to have a higher brightness and better smoothness than when only the final coating is applied. 2 figures. W.B.W.

PAPER—CURLING

GRAY, GLEN G. Preparation of photographic paper having good curl characteristics. U. S. patent 2,659,680. Filed April 24, 1951. Issued Nov. 17, 1953. 7 claims. Assigned to Eastman Kodak Company. [Cl. 117-34]

Water or steam is used to wet the reverse side of the web just prior to application of the photographic emulsion and in sufficient amount to increase the moisture content 2-5%. It is claimed that this treatment reduces the tendency to curl. W.B.W.

PAPER SIZING

MORRIS, BERT M. Dry rosin size. Canadian patent 497,760. Filed July 15, 1946. Issued Nov. 17, 1953. 10 claims. Assigned to Hercules Powder Company.

Gum rosin is isomerized in the molten state in the absence of solvent with a catalytic amount of sulfuric or *p*-toluenesulfonic acid, then completely saponified with caustic and spray dried. This is the same as U. S. patent 2,476,450 (July 19, 1949); *cf.* B.I.P.C. 19: 896. W.B.W.

PAPER SPECIALTIES

BORDEN, GEORGE C., JR., and KARLSON, KARL R. Antifungus wrapper, etc. Canadian patent 497,799. Filed Nov. 14, 1947. Issued Nov. 17, 1953. 7 claims. Assigned to Riegel Paper Corporation.

Wrapping paper, glassine, or cellophane is coated with a nitrocellulose lacquer containing 1-2% of an antimycotic agent such as dimethyl dichlorosuccinate. Bread packaged in this wrapper stays fresh and free from mold, is protected by the gradual vaporization of the agent, and does not depend on contact with the wrapping. This is identical with U. S. patent 2,406,990 (Sept. 3, 1946). W.B.W.

CRANDALL, HENRY C. Glass strand reinforced paper. U. S. patent 2,653,090. Filed May 13, 1948. Issued Sept. 22, 1953. 4 claims. Assigned to Mosinee Paper Mills Company. [Cl. 92-3]

Glass yarn coated with a thermoplastic resin is incorporated in a web of paper, cardboard, fiberboard, or the like in closely spaced parallel rows at the time of manufacture; the yarn strands are in the order of 1/32 of an inch or less in diameter. A relatively smooth product with only slight ridges and, in addition, the greater ease of handling the glass yarn compared with natural materials such as jute, cotton, or the like are among the advantages claimed for the method. 2 figures. W.B.W.

CROSS, BERT S., and NETHERLY, GEORGE P. Transfer coating. U. S. patent 2,658,007. Filed June 22, 1950. Issued Nov. 3, 1953. 8 claims. Assigned to Minnesota Mining & Manufacturing Company. [Cl. 117-17]

Particles of abrasive material or the like are applied to a web (I) which contains a temporary adhesive coating upon which the particles are positioned by suitable means such as electrostatic force. (I) and the permanent backing (II) coated with a permanent adhesive are brought into contact, whereby the particles become imbedded, properly oriented, in the permanent binder. (I) may be stripped from (II) as soon as the permanent binder has set, or it may be left in contact with the finished sheet and removed just prior to use. 12 figures. W.B.W.

LIEBENOW, JULIUS G. Paper cup handle. U. S. patent 2,659,527. Filed June 16, 1949. Issued Nov. 17, 1953. 1 claim. [Cl. 229-52]

The handle structure is made up of a pair of oppositely curved, loop-shaped handle members cut out from the cup body and hingedly attached thereto. A tab in each of the handles may be folded together to interlock the elements, thus forming a more rigid handle. 6 figures. W.B.W.

MAZEE, WILLEM M., and LOOIS, HENDRIKUS J. Method of preparing high-glaze waxed paper. U. S. patent 2,659,683. Filed June 10, 1952. Issued Nov. 17, 1953. 13 claims. Assigned to Shell Development Company. [Cl. 117-103]

Waxed paper with a high glaze and improved water-vapor-permeability characteristics is prepared by applying molten wax to the paper by either immersion or coating rolls, then passing the treated web through a cooling bath of mercury maintained at 0-20°C. W.B.W.

PATTILLOCH, DONALD K. Process of combining synthetic resins and other materials with cellulose. U. S. patent 2,658,828. Filed Sept. 15, 1948. Issued Nov. 10, 1953. 3 claims. Assigned to Chemloch Corporation. [Cl. 92-21]

Substantially complete pick-up of resin by fibers in aqueous dispersion is accomplished by first treating the fibers with a cationic surface-active wetting agent in a beater, adding a water-soluble salt of a trivalent metal such as chlorides, acetates, and nitrites of chromium, nickel, or aluminum, and finally mixing an aqueous dispersion of the above-treated fibers with a negatively charged aqueous dispersion of a resin such as phenol formaldehyde, butadiene styrene, polyethylene, etc., after which the web is formed in accordance with conventional practice. The resin is caused to flow and set by subjecting the web to suitable temperatures and pressures for the resin employed. W.B.W.

PHYSICAL TESTING—MOISTURE

BREAZEALE, WILLIAM M. Method and apparatus for measuring moisture content. U. S. patent 2,659,860. Filed Aug. 27, 1949. Issued Nov. 17, 1953. 19 claims. Assigned to Institute of Textile Technology. [Cl. 324-49]

Moisture content of fibrous material in bale, lap, or web form (e.g., baled cotton or a web of paper) is measured by microwave absorption. Wavelengths in the order of 1-3 cm. are claimed to be useful for most applications with power requirements necessarily dependent upon the nature of the material being tested. 4 figures. W.B.W.

PHYSICAL TESTING—PAPER—MOISTURE

ZABEL, LOWELL W., SCHMIDT, ROBERT W., and CASTON, RALPH H. Indicating and recording equipment. U. S. patent 2,659,048. Filed Feb. 3, 1948. Issued Nov. 10, 1953. 9 claims. Assigned to Paper Patents Company. [Cl. 324-65]

The moisture content of a traveling web of paper is measured continuously by the variation in electrical resistance between a sensing element wound in a spiral around the scanning roll and the surface of a guide roll. Changes in resistance are indicated by a galvanometer in the circuit, in which a recording means may be included if desired. 14 figures. W.B.W.

PHYSICAL TESTING—POROSITY

BROWN, HUGH M. Porosity tester. U. S. patent 2,659,433. Filed Feb. 3, 1950. Issued Nov. 17, 1953. 2 claims. Assigned to Clemson Agricultural College of South Carolina. [Cl. 161-18]

Testing fluid is forced through the sample by a weighted piston with means for automatically timing the downward stroke. The size of the sample chamber may be changed by changing the length of the plunger that compresses the sample, and the amount of compression applied may be altered by varying the weight of the plunger. 2 figures. W.B.W.

PLYWOOD

WELCH, ARTHUR R. Method of and apparatus for making covered wood products. Canadian patent 497,334. Filed July 24, 1945. Issued Nov. 3, 1953. 15 claims.

Surface irregularities and imperfections in the face of plywood panels are sealed by the use of an aggregate such as sawdust or sanderdust (mixed with a synthetic resin) spread over the surface in an even layer, then pressed in a hot press between metal plates to impart a smooth surface to the panel. 14 figures. W.B.W.

SHIPPING CONTAINERS

PAUL, PHILIP F., and O'LEARY, LOUIS. Shipping container. U. S. patent 2,657,849. Filed March 10, 1950. Issued Nov. 3, 1953. 1 claim. Assigned to The Patent and Licensing Corporation. [Cl. 229-23]

A container of open-top construction (for the shipment of bananas and the like) comprises end walls of trapezoidal shape and side walls that slope inwardly toward the top of the container. An extension of the end wall is folded over and engaged in a slot in the side wall, thus forming a platform at each end of the carton. Containers of this construction may be stacked without danger of the upper units slipping into the lower ones. 5 figures. W.B.W.

SHIPPING CONTAINERS—MULTIWALL BAGS

DOYLE, JAMES F. Method of making bags. U. S. patent 2,660,100. Filed Dec. 11, 1948. Issued Nov. 24, 1953. 3 claims. Assigned to Arkell Safety Bag Company. [Cl. 93-35]

A method for forming the valve sleeve for a multi-ply crinkled paper bag is claimed which utilizes a heat-sealing film on the inside of the sleeve to bond it to the bag body. The sleeve is easily inserted either manually or by

machine. The sealing strip which closes the top of the bag is extended to seal the valve opening. 9 figures. W.B.W.

STARCH

KERR, RALPH W., and FAUCETTE, WILLIAM A. Derivatization of starch with lactones. U. S. patent 2,660,577. Filed May 27, 1950. Issued Nov. 24, 1953. 27 claims. Assigned to Corn Products Refining Company. [Cl. 260-233.5]

A starch product of improved stable paste viscosity and clarity useful in food products, textile printing pastes, etc. is formed by reacting starch with a lactone under controlled conditions of time, temperature, pH, and reagent concentration. β-Propiolactone is a preferred reagent for the process. W.B.W.

MOE, OWEN A. High viscosity starch ethers and process of preparing same. Canadian patent 497,394. Filed Aug. 7, 1948. Issued Nov. 3, 1953. 10 claims. Assigned to General Mills, Inc.

This is similar to Canadian patent 497,392 (Nov. 3, 1953; *cf.* B.I.P.C. 24: 413) except that potato starch or the like is used as a raw material and the viscosity of the final product is increased by reprecipitation of the material from an acidified solution with ethanol. W.B.W.

STOCK PREPARATION

HILL, HAROLD S. Method of processing wood pulp. U. S. patent 2,660,097. Filed April 16, 1949. Issued Nov. 24, 1953. 4 claims. Assigned to Price Brothers & Company, Limited. [Cl. 92-20]

The addition of 0.5-8% of groundwood pulp to a chemical pulp is claimed to make the chemical pulp (especially sulfite pulp) capable of absorbing power from opposed tractively working faces without slipping or smearing on the faces, when treated in the Curlator according to U. S. patent 2,516,384 (July 25, 1950; *cf.* B.I.P.C. 20: 923). 1 figure. W.B.W.

SULFUR DIOXIDE

LEWIS, WARREN K. Production of sulfur dioxide. Canadian patent 497,646. Filed Sept. 14, 1949. Issued Nov. 10, 1953. 7 claims. Assigned to Standard Oil Development Company.

Pure sulfur dioxide can be prepared continuously by burning sulfur or sulfur-containing ores with a controlled quantity of air and passing the gases through a purification zone containing a mixture of iron oxides. This is identical with U. S. patent 2,608,467 (Aug. 26, 1952); *cf.* B.I.P.C. 23: 153. 1 flowsheet. W.B.W.

TALL OIL

ECKHARDT, OWEN S., COOK, DON F., and KNAPP, ISMOND E. Treatment of resin acid-fatty acid mixtures. U. S. patent 2,659,718. Filed Aug. 22, 1951. Issued Nov. 17, 1953. 17 claims. Assigned to Leach Brothers, Inc. [Cl. 260-97.5]

Crystallization of the resin acids from a mixture of resin and fatty acids such as tall oil is inhibited by the esterification (small amounts of *p*-toluenesulfonic acid may be added as a catalyst if desired) of the fatty acids with alcohol at temperatures below that at which esterification of the resin acids takes place. The product is further reacted with 4-12% by weight of form-

aldehyde (usually in the form of paraformaldehyde) at an elevated temperature to form a product which shows no crystallization after several months' storage at room temperature. W.B.W.

TEXTILE INDUSTRY AND FABRICS—FIREPROOFING

WALTER, GEORGE E., HORNSTEIN, IRWIN, and SHELD, CLARENCE A. Flameproofed article and method of making same. U. S. patent 2,660,542. Filed Nov. 26, 1948. Issued Nov. 24, 1953. 5 claims. Assigned to The Glenn L. Martin Company. [Cl. 117-136]

A flameproofing compound particularly valuable for textiles of all kinds is prepared from an organic phosphorus compound having at least one active double bond, polymerizing that compound, applying it in aqueous emulsion to the textile and halogenating (particularly brominating) it thereon. W.B.W.

WALTER, GEORGE E., HORNSTEIN, IRWIN, and SHELD, CLARENCE A. Flameproofing polymers. U. S. patent 2,660,543. Filed Nov. 26, 1948. Issued Nov. 24, 1953. 6 claims. Assigned to The Glenn L. Martin Company. [Cl. 117-136]

A flameproofing compound suitable for natural or synthetic fibers and resistant to laundering or dry cleaning is prepared by halogenation (particularly bromination) of an alkene phosphate, either before or after polymerization, and application to textiles. W.B.W.

WOOD—EXTRACTIVES

VAN BECKUM, WILLIAM G. Process for producing dehydroperillic acid. Canadian patent 497,659. Filed March 10, 1948. Issued Nov. 10, 1953. 6 claims. Assigned to Weyerhaeuser Timber Company.

A process is described for the recovery of dehydroperillic acid and lignin products from lignocellulosic material. As an example, Asplund fiber from western red cedar is extracted with a 0.6% aqueous sodium hydroxide solution, the extract is neutralized with sulfuric acid, concentrated by evaporation to 12% of its original volume, cooled, and filtered. The filtrate is acidified to pH 5, then heated to 65°C. and allowed to cool slowly, whereupon the supernatant liquor contains relatively large crystals of dehydroperillic acid which are separated on a coarse filter and washed with cold water. This is the same as U. S. patent 2,541,127 (Feb. 13, 1951); *cf.* B.I.P.C. 21: 525-6. 1 flowsheet. W.B.W.

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